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ABSTRACT

This study examines the age distribution of faculty retirements at 101 colleges and universities offering at least the baccalaureate degree, representing 35,000 faculty. It examines both historical retirement patterns and distributions of faculty by age and discipline. The study also examines data from a survey of 518 retired faculty members concerning factors influencing their retirement decision. Study findings include: (1) the anticipated 1994 elimination of mandatory retirement is unlikely to cause an immediate substantial increase in the average age of retirement; (2) faculty retire on average 1.8 years later at independent versus public institutions of higher education; (3) average ages at retirement differ depending on the retirement program; (4) 88 percent of survey respondents indicated that mandatory retirement was not a significant factor in their decision to retire; (5) the overriding concern among faculty retirees is their financial condition upon retirement; and (6) projections of retirement rates indicate that the largest number of retirements will occur between 1998-99 and 2002-03, though rates are projected to vary by discipline. Thirty-five tables display data on such topics as average ages at retirement by control of institution, level of institution, retirement plan, and location of institution; importance of mandatory retirement in separators' decision to retire; and factors in retirees' retirement planning by discipline and gender. Appendices provide survey instruments, a list of participating institutions, and detailed statistical data. (Contains approximately 40 references.) (JDD)

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Faculty Retirement Projections Beyond 1994

Effects of Policy on Individual Choice

G. Gregory Lozier
Michael J. Dooris

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FOREWORD

This study answers major research questions on faculty retirement patterns. It also develops faculty retirement projections, by broad discipline areas, through the year 2003. The research makes a valuable contribution to our understanding of faculty retirement behavior and to the literature on faculty supply and demand. This understanding is necessary to preserve and promote the continuing development of a high-quality professoriate.

We are pleased to have the opportunity to comment on and to publish this study. It is an excellent example of the type and quality of research recommended in our first publication in this series on faculty supply and demand--*Bringing into Focus the Factors Affecting Faculty Supply and Demand: A Primer for Higher Education and State Policymakers.*

Our congratulations and thanks to G. Gregory Lozier and Michael J. Dooris for an excellent study. We gratefully acknowledge the support of our co-publisher, The Teachers Insurance and Annuity Association (TIAA-CREF), and the continued support of our colleague and friend, Peggy Heim, Senior Research Project Officer, TIAA-CREF.

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We are especially grateful to the individuals from 101 colleges and universities around the country who agreed to participate and who provided the necessary institutional data. We thank you for your efforts, and for your patience in awaiting the results of this study. And to your faculty retirees, thanks for an outstanding response.

A special acknowledgment is given to the Western Interstate Commission for Higher Education (WICHE), for publishing this report. We are indebted to Judith Gill, WICHE Director of Research and Policy Analysis, for her general editorial guidance, and for providing her insightful comments on the faculty retirement issue at the outset of this report. We gratefully appreciate the careful editing by Virginia L. Golder, WICHE Senior Research Assistant.

Finally, to anyone who ever collaborates in a research project, we hope that you will find the same blend of enjoyment, exasperation, and colleagueship that we have experienced in this genuinely shared effort.

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EXECUTIVE SUMMARY

Faculty retirement behavior is an important issue for our nation's colleges and universities, particularly in light of the anticipated 1994 elimination of mandatory retirement for faculty. This study examines the age distribution of faculty retirements at 101 institutions employing 35,000 faculty. It examines both historical retirement patterns and the distributions of faculty by age and discipline. The study also examines data from a survey of five hundred retired faculty members on factors influencing their retirement decision.

The study was designed to answer the following research questions:

Are faculty retirement patterns likely to change as a result of the elimination of mandatory retirement?

The uncapping of the mandatory retirement age is unlikely to cause an immediate substantial increase in the average age of retirement. Examination of average retirement ages before and after the 1982 change of mandatory retirement age from 65 to 70 suggests only gradual shifts in retirement patterns. Results from the survey of retired professors indicate that mandatory retirement policies were not a significant factor in their decisions to retire. However, independent institutions are likely to be impacted earliest by the elimination of mandatory retirement.

Do faculty retirement patterns differ by control or level of institution?

Faculty retire on average 1.8 years later at independent versus public institutions of higher education. This gap is most pronounced in the comparison of independent comprehensive versus public comprehensive universities.

The evidence is mixed on the likelihood that the public-independent retirement age difference may be accounted for in part by differences between defined benefit and defined contribution programs.

What factors are most influential in a faculty member's decision about when to retire?

While many factors play a role in the retirement decision, the overriding concern among faculty retirees is their financial condition upon retirement.

What faculty retirement patterns are anticipated through the year 2000?

Projections of retirement rates over the next 15 years indicate that the largest number of retirements will occur between 1998-99 and 2002-03.

Retirement projections vary by discipline. Retirement rates for faculty in languages and letters will peak from 1988-89 through 1992-93. Retirements for life sciences faculty are projected to increase slightly through the mid-1990s and return to current levels between 1998-99 and 2002-03. In the mathematical and physical sciences, retirements are projected to increase modestly but steadily through the year 2002-03.

I. INTRODUCTION

Since 1980, a cottage industry has sprung up to study college and university faculty demographics, retirements, mobility, and related topics. This development has been in part a response to the 1978 amendments to the federal Age Discrimination in Employment Act (ADEA) which, as of July 1, 1982, raised the permissible age for the mandated retirement of tenured faculty from 65 to 70 (Public Law 95-2256, 1978). The ADEA was further modified by 1986 amendments which, barring congressional revision, will eliminate mandatory retirement for tenured faculty as of January 1, 1994 (Public Law 99-592, 1986). Effective then, the decision to retire will rest with the individual faculty member; it cannot be imposed by institutional or external policy.

Initially, these changes sparked concerns about how colleges and universities, in the absence of mandatory retirement, could terminate the contracts of their aging faculty. In the early 1980s, institutions created various forms of early retirement incentives to help make room for younger professors.

However, the wisdom of that course was challenged in the mid-1980s, most notably with the publication of Bowen and Schuster's *American Professors: A National Resource Imperiled* (1986). This book painted a picture of a profession endangered by a graying faculty, an inadequate supply of aspiring new faculty, and the lackluster appeal of a career in academe. At about the same time, several analysts began to warn that more attention should be paid to the challenges of replacing the large cohort of faculty hired in the growth years of the 1960s who would be retiring in unprecedented numbers in the 1990s.

In 1987, a Pennsylvania State University study (Lozier and Dooris, 1988) examined the age distribution of faculty retirements at 24 institutions that are members of the Association of American Universities (AAU). A total of 22,000 faculty were represented.

HIGHLIGHTS

- *Investigation into faculty retirement issues has emerged, in part, as a response to the 1978 and 1986 amendments to the Age Discrimination in Employment Act (ADEA).*
- *The study provides previously unavailable data on faculty age distribution by discipline.*
- *A range of four-year institutions were included in the study.*
- *The research project was conceived to enable and encourage institutions to analyze more critically their own faculty data.*

The results of that research were in some respects quite startling. The age distributions of the faculty-in-place indicated that from 1987 to the year 2000 the number of faculty reaching the historical age of retirement would increase by about 50 percent. Also, data on the average ages of retirement from 1981-82 through 1986-87 suggested that liberalization of the mandatory retirement policy in 1982 had not caused faculty on average to delay retirement in this set of institutions.

The study presented here provides information from a larger and more nationally representative database of more than 100 colleges and universities employing 35,000 tenured and tenure-track faculty. It examines both historical retirement patterns and the distributions of professors by age and discipline. A unique, separate data set gives some insight into the factors, including mandatory retirement policies, that influenced the individual retirement decisions of more than 500 faculty members. The large set of institutional data and the smaller but substantial set of personal, individual information collected for this study were designed to answer both demographic questions about anticipated retirement patterns and behavioral questions about the factors which influence retirement decisions.

This research was conceived to enable and encourage institutions to analyze more critically their own faculty data. In addition, this study contributes to the understanding of faculty trends in several ways:

- It provides previously unavailable age distributions of both faculty-in-place and retirees by discipline;
- It covers a range of institutional types, including baccalaureate colleges, comprehensive institutions, and research universities, both public and private;
- The data span a broad range of disciplines.

The delimited research scope of this project permitted the exploration of a few questions in considerable depth. The research focuses carefully and deliberately upon faculty retirements and, in particular, upon the implications of changing mandatory retirement policies. Data are presented in the main report and in the appendices in considerable detail. It is hoped that these data will be used by institutions or academic researchers interested in performing secondary analyses. The report also interprets and relates the results, and discusses the main findings. The study concludes by suggesting some of the implications of these findings, both for the management of individual campuses and for further exploration of this topic.

II. RESEARCH METHODOLOGY

This study is designed to improve our understanding of faculty retirement behaviors and to predict future retirement trends. It shares the difficulties inherent in most social science forecasts. It is limited by the availability of data, the ability to process information completely and accurately, the uncertain influence of implicit and explicit assumptions, and the possibility that interventions may eventually affect future outcomes in unanticipated ways.

These are serious obstacles. They cannot be entirely overcome, but they can be partially offset by the choice and execution of a methodology that is appropriate to the research goals. To achieve that end, the methodology touches upon three spans of time.

Past, Present, and Future

In trying to foresee the impact of the 1994 uncapping of mandatory retirement for tenured faculty, we look to the recent past and study the effects upon retirement patterns of a similar legislative change which occurred in 1982. We apply such historical information to a current database which describes the present in terms of variables such as:

- distributions of faculty (by age, discipline, institutional type, and region);
- the variety of retirement policies and benefit programs; and
- the impact of assorted factors on individuals' retirement decisions.

HIGHLIGHTS

- *Two survey instruments were used--one for institutions and one for individuals who had separated from their institutions.*
- *One hundred and one institutions and 518 faculty provided data for this study.*
- *Only colleges and universities offering at least the baccalaureate degree were surveyed.*
- *The research was designed to answer four questions:*
  1. *Are retirement patterns likely to change as a result of the 1994 elimination of mandatory retirement?*
  2. *Do faculty retirement patterns differ by control or level of institution?*
  3. *What factors are most influential in a faculty member's decision about when to retire?*
  4. *What faculty retirement patterns are anticipated through the year 2000?*

By applying historical retirement patterns to the current body of faculty, we are able to create a model which projects future retirements. Finally, some of the model's initial assumptions are changed in order to develop alternative scenarios.

Research Questions

The research approach was designed to answer four questions:

1. Are retirement patterns likely to change as a result of the 1994 elimination of mandatory retirement?
2. Do faculty retirement patterns differ by control (independent, public) or level of institution (baccalaureate, comprehensive, doctoral)?
3. What factors are most influential in a faculty member's decision about when to retire?
4. What faculty retirement patterns are anticipated through the year 2000?

Data Collection

Some published data are used in this study, but the primary data were collected through two surveys.

In an earlier exploration of faculty aging and retirements (Lozier and Dooris, 1988), 24 Association of American Universities Data Exchange members -- primarily public research universities -- were surveyed on faculty demographics and retirement policies. This study builds upon those findings but includes a larger and more diverse sample of colleges and universities. (See Appendix A for data collection instrument.)

The following data were collected to address research questions 1, 2, and 4:

- past and present institutional policies on mandatory retirement;
- type(s) of retirement plan (defined benefit/defined contribution);
- number and average age of retirees from 1981-82 through 1987-88;
- number of retirements by age and discipline during 1987-88;
- number of faculty-in-place by age and discipline during fall 1987.

The third research question, dealing with individual retirement and career decisions, is addressed through a survey of all faculty age 55 or older, who during 1987-88, separated from one of the participating institutions.[1]

---

[1] The higher education literature provides relatively little guidance about the major determinants of professors' retirement behavior. The 18 measures in this survey were included on the basis of the retirement research literature on the U.S. work force (Burkhauser and Quinn, 1983; Anderson et al., 1986; LaRock, 1987; Quinn and Burkhauser, 1983).

This survey instrument (see Appendix B) requested information on:

- current employment or retirement status;
- the relative influence of 18 factors upon the retirement decision;
- the importance of the institution's policy on mandatory retirement;
- demographic descriptors (age, gender, academic discipline, title).

Scope: Baccalaureate and Beyond

This study encompasses four-year baccalaureate, comprehensive, and doctoral institutions. Because the faculty pipeline, career paths, individuals' regional and sector mobility, and the academic missions of two-year institutions may differ significantly from four-year institutions, an analysis tailored to one group might be ill-suited to the other. Given the resources available for this study, the scope of the investigation was limited to colleges and universities offering at least the baccalaureate degree.

Sample Stratification

This study is based upon the collection and analysis of data at two levels -- institutional and individual. It requires cell sizes large enough to justify statistical analysis of both individual and institutional variables.

The U.S. Department of Education, Office of Educational Research and Improvement (OERI), provided a list of institutions which included information on level (baccalaureate, comprehensive or doctoral), control (independent or public), and faculty size. The definitions used by OERI (National Center for Education Statistics, 1985) are:

- Doctoral: institutions awarding 30 or more doctoral degrees per year;
- Comprehensive: institutions awarding 30 or more post-baccalaureate degrees per year, but not including doctoral institutions;
- Baccalaureate: all other institutions, but not including institutions less than four-year or specialized institutions.

Drawing upon the OERI information and Bowen and Schuster's (1986) findings on the proportion of faculty who leave colleges or universities in a given year (4 to 6 percent), it was determined that our sample of 101 colleges and universities would produce adequate stratified sample sizes for both institutions and individuals.

An individually addressed letter, sent to the chief academic officer of 320 colleges and universities, invited participation in the study. Ultimately, 101 institutions submitted the requested information.

Institutional Participation

The survey requested a large volume of data in great detail and, for some items, data over a seven-year period. These 101 institutions provided a database of over 35,000 currently employed tenure-track faculty from which to project retirements. This number represents about 8 percent of the nation's full-time faculty.

Appendix C lists all participating institutions. Table 1 provides a summary by control, level, and region.

Table 1
Summary of Participating Institutions

Control & Level	Northeast	South	Midwest	West	Total
Public					
Baccalaureate	6	7	5	2	20
Comprehensive	3		1	1	8
Doctoral	4	5	3	3	15
Total Public	13	15	9	6	43
Independent					
Baccalaureate	12	6	8	1	27
Comprehensive	10	3	2	2	17
Doctoral	10	1	3	0	14
Total Independent	32	10	13	3	58
TOTAL	45	25	22	9	101

Individual Participation

Each participating college and university provided the names and addresses of faculty age 55 or older who had separated from the institution during the 1987-88 academic year. While this study is focused on retirees, colleges and universities do not share a clear definition of "retired" faculty. For example, there is little agreement about how to label individuals in arrangements such as phased retirement or bridged retirement. Some colleges and universities do not consider faculty who draw pension benefits before age 55 to be retired, while others do not make that distinction. Therefore, irregularities among institutional definitions of "retirees" were avoided by the use of the "separator" category, and actual retirement status was established by separators' responses to the instrument.

The separator survey was mailed to 747 separators. Five hundred and eighteen usable responses were received for a response rate of 69 percent. (Five hundred and forty responses were actually received, but only 518 -- those for faculty indicating an age of 55 or greater -- were retained for analysis.) The distribution by institutional control and level of the respondents to the faculty separator survey is shown in Table 2.[2]

Table 2
Summary of Respondents by Level and Control

	Control		
Level	**Public**	**Independent**	**Total**
Baccalaureate	28	35	63
Comprehensive	36	49	85
Doctoral	268	102	370
TOTAL	332	186	518

---

[2] Table 2 appears to include a disproportionate share of individuals from public and doctoral universities, while Table 1 is dominated by independent and baccalaureate institutions. This apparent imbalance is simply a reflection of the distribution of colleges and universities in the U.S., and of the relative size of each type of institution. That is, there are many baccalaureate colleges, but research universities employ large numbers of professors.

HIGHLIGHTS

Mandatory Retirement Policies

- *Prior to the federally legislated change of permissible mandatory retirement age from 65 to 70, 86 percent of responding institutions had a policy mandating retirement. Of this group, one-half had shifted mandatory retirement age to 70 before the federal requirement took effect.*
- *Retirement patterns were most stable from 1981-82 to 1987-88 for institutions that by 1981-82 had eliminated mandatory retirement or had mandated retirement at age 70.*

Retirement Age by Control and Level of Institution

- *The average retirement age from 1981-82 to 1987-88 was 1.8 years higher for professors at independent institutions (65.3) than for professors at public institutions (63.5). This relationship is most pronounced for independent comprehensives versus public comprehensives.*

Type of Retirement Programs

- *Average ages at retirement differ depending on the retirement program. Professors at the ten institutions offering only a defined benefit retirement program reported an overall average retirement age of 63.1. Institutions offering only a defined contribution program (N=46) showed an average retirement age of 65.3 years.*

Average Age of Retirement by Geographic Area

- *Between 1981-82 and 1987-88, average retirement ages were highest in the Northeast and Midwest (64 and 64.9, respectively) and lowest in the South and West (63.6 and 63.2, respectively). Variations in regional profiles explain the differences--public institutions report faculty retiring earlier than do independent, and the South and West have large numbers of public institutions.*

Effect of Mandatory Retirement on Retirement Decisions

- *Eighty percent of respondents indicated that mandatory retirement was not a significant factor in their decision to retire.*
- *The majority of respondents (88 percent) indicate that they would have retired by ages 70 to 75 had mandatory retirement not been a factor.*

Factors Influencing Retirement Decisions

- *Financial considerations were the most important factors affecting retirement decisions.*

III. RESULTS

Institutional Policies

Mandatory Retirement Policies

The first research question, "Are retirement patterns likely to change as a result of the 1994 elimination of mandatory retirement?," cannot be answered definitively. However, an informed guess can begin with an examination of the changes which accompanied the 1982 federal legislation raising the permissible mandatory retirement age for tenured faculty from 65 to 70. Table 3 presents data on institutions' retirement policies prior to 1982.

Table 3
Institutions Mandating Retirement of Tenured Faculty Based on Age as of 1981-82

	Mandatory Retirement:		
Control & Level	Yes	No	Total
Public:			
Baccalaureate	16	3	19
Comprehensive	7	1	8
Doctoral	13	1	14
Total Public	36	5	41
Independent:			
Baccalaureate	20	7	27
Comprehensive	16	1	17
Doctoral	13	1	14
Total Independent	49	9	58
TOTAL	85	14	99

	Chi-Square		
	d.f.	Value	Prob.
Control by Policy	1	0.218	0.640
Level by Policy	2	4.093	0.129

Eighty-six percent of the responding institutions had a policy mandating retirement prior to the federally-legislated change in 1982. A chi-square analysis shows no significant differences by control (independent or public) or level (baccalaureate, comprehensive, or doctoral).

While the vast majority of institutions still mandated retirement prior to 1982, many institutions had shifted to a mandatory retirement age of 70. Table 4 shows that by 1981, before the federal requirement took effect, about half of the 85 institutions with a mandatory retirement policy had increased the age of retirement from 65 to 70. A significantly greater proportion of that shift occurred in public institutions than in the independent sector.

Table 4
Mandatory Retirement Ages (for Institutions with Mandatory Retirement), 1981-82

Control	65	66-69	70	Total
Public	12	3	21	36
Independent	29	1	19	49
TOTAL	41	4	40	85

	Chi-Square		
	d.f.	Value	Prob.
Control by Policy	2	6.308	0.043

Comparison between Table 3 and Table 5 shows that between 1981-82 and 1987-88, the number of institutions mandating retirement on the basis of age decreased by 13. Of the 13 colleges and universities that eliminated mandatory retirement, five were independent and eight were public institutions.

Table 5
Institutions Mandating Retirement of Tenured Faculty Based on Age by Control of Institution, 1987-88

Control	Yes	No	Total
Public	28	12	40
Independent	44	14	58
TOTAL	72	26	98

	Chi-Square		
	d.f.	Value	Prob.
Control by Policy	1	0.417	0.518

However, nearly three-quarters of this sample had *not* eliminated mandatory retirement as of 1987-88 (see Tables 5 and 6). Table 6 also shows that baccalaureate colleges are significantly less likely than other institutions to mandate retirement based on age.

Table 6
Institutions Mandating Retirement of Tenured Faculty Based on Age by Level of Institution, 1987-88

Level	Yes	No	Total
Baccalaureate	27	19	46
Comprehensive	20	5	25
Doctorate	25	2	27
TOTAL	72	26	98

	Chi-Square		
	d.f.	Value	Prob.
Level by Policy	2	10.76	0.005

Impact of Policy Change

Table 7 separates responding institutions into two groups on the basis of their 1981-82 retirement policies. Cohort 1 includes those colleges and universities that mandated retirement at age 65; cohort 2 includes those that mandated retirement at age 70. Cohort 1 shows a very slight increase in the average age of retirement toward the end of the seven-year period. However, the average age at retirement for cohort 2 institutions also shows a similar increase. The overall seven-year weighted averages for both cohorts are virtually the same as the 1981-82 averages.[3]

Table 7
Average Ages at Retirement on the Basis of 1981-82 Mandatory Retirement Policy

1981-82 Policy	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
[1] Mandatory retirement age of 65								
No. of Institutions	29	28	32	34	33	28	34	31
No. of Individuals	150	181	204	212	246	223	249	209
Avg Age at Retirement	**63.9**	**63.7**	**63.3**	**63.4**	**63.5**	**64.2**	**64.2**	**63.8**
Standard Deviation	5.1	5.4	6.2	8.1	6.7	6.3	6.4	0.9
[2] Mandatory retirement age of 70								
No. of Institutions	23	26	27	30	32	34	35	30
No. of Individuals	143	222	202	276	253	258	320	239
Avg Age at Retirement	**64.3**	**64.5**	**64.5**	**64.1**	**64.2**	**64.0**	**64.7**	**64.3**
Standard Deviation	5.2	6.2	5.7	7.6	6.8	6.7	6.5	0.7

***Overall definitions:**
No. of Institutions--simple average
No. of Individuals--simple average
Average Age at Retirement--Weighted average
Standard Deviation--standard deviation of the standard deviations

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[3] It should be noted that the overall standard deviation, representing the standard deviation of the seven separate standard deviations, is less than 1.0 for each cohort. The overall standard deviations throughout many of the tables that follow are relatively small, indicating that the retirement age variability within each year, from year to year, is quite stable.

Table 8
Average Ages at Retirement by Pre- and Post-1982 Retirement Policies

Change from Pre- versus Post-1982 Mandatory Retirement Policy	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
[1] From Age 65 to Age 70:								
No. of Institutions	24	22	27	28	27	26	30	26
No. of Individuals	143	170	192	202	228	221	238	199
Avg Age at Retirement	**63.8**	**63.6**	**63.4**	**63.4**	**63.6**	**64.2**	**64.3**	**63.8**
Standard Deviation	5.6	6.0	6.5	8.8	7.2	6.5	6.5	1.0
[2] From Age 65 to None:								
No. of Institutions	5	6	5	6	6	2	4	5
No. of Individuals	7	11	12	10	18	2	11	10
Avg Age at Retirement	**64.7**	**64.6**	**62.6**	**63.9**	**63.3**	**65.0**	**63.0**	**63.6**
Standard Deviation	1.5	1.0	4.9	3.4	4.6	0.0	6.1	2.1
[3] Retaining Age 70:								
No. of Institutions	16	20	21	25	25	26	27	23
No. of Individuals	99	170	172	238	197	305	256	205
Avg Age at Retirement	**65.1**	**65.0**	**64.7**	**64.3**	**64.7**	**64.5**	**65.0**	**64.7**
Standard Deviation	4.9	6.2	5.8	8.0	7.1	6.6	6.6	0.9
[4] From Age 70 to None:								
No. of Institutions	6	5	5	4	6	7	7	6
No. of Individuals	28	30	18	18	28	34	44	29
Avg Age at Retirement	**63.5**	**63.3**	**63.6**	**63.0**	**63.0**	**62.1**	**63.9**	**63.2**
Standard Deviation	2.5	4.3	3.4	4.8	2.2	5.3	6.1	1.3
[5] No Mandatory Age:								
No. of Institutions	6	5	5	6	6	7	5	6
No. of Individuals	14	16	20	27	24	37	25	23
Avg Age at Retirement	**63.1**	**64.1**	**64.0**	**60.3**	**61.9**	**63.6**	**62.7**	**62.7**
Standard Deviation	7.2	4.9	4.2	14.0	6.9	6.7	6.2	3.0

***Overall definitions:**
No. of Institutions--simple average
No. of Individuals--simple average
Average Age at Retirement--weighted average
Standard Deviation--standard deviation of the standard deviations

Table 8 expands Table 7 into five different cohorts:

1. Institutions that shifted their mandatory retirement age from 65 to 70;
2. Institutions that shifted from a mandatory retirement age of 65 to no mandatory retirement age;
3. Institutions maintaining a mandatory retirement age of 70 across the seven year time frame;
4. Institutions shifting from a mandatory retirement age of 70 to no mandatory retirement age;
5. Institutions having no mandatory retirement age throughout the period.

This refinement creates some cells in which the number of institutions and/or individuals are relatively small. However, the direction of some of the results bears reporting. For example, average ages at retirement are most constant over the seven-year period for cohorts 3, 4, and 5. That is, retirement patterns are most stable for colleges and universities that had eliminated mandatory retirement by 1981-82 or had mandated retirement at age 70 throughout the seven-year period. Institutions that changed their mandatory retirement age from 65 to 70 (cohort 1) showed a very slight increase in the average age of retirement during the last two years of the period. The number of retirements in institutions that shifted from mandatory retirement at age 65 to no mandatory retirement (cohort 2) may be too small to interpret.

Institutional Profiles

Retirement Age by Control and Level of Institution

Other studies have suggested that faculty in independent institutions retire at a higher age, on average, than do faculty at public colleges and universities (COFHE, 1987). Tables 9 through 11 present the average retirement ages for 1981-82 through 1987-88 by control and by level. Table 9 and Figure 1 show that the average retirement age over this period for professors at independent institutions (65.3) is 1.8 years higher than for professors at public institutions (63.5), with the difference ranging between 0.4 to 2.5 years. Table 10 indicates that average retirement ages are highest in doctoral institutions. These relationships also are seen in Table 11, where the distinction is most pronounced for independent comprehensives versus public comprehensives. Variability in average retirement ages over the seven-year period also is greatest in comprehensive institutions.

Table 9
Average Ages at Retirement by Control of Institution

Control	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
Public:								
No. of Institutions	26	30	33	33	35	32	35	32
No. of Individuals	226	319	352	388	382	379	455	357
Avg Age at Retirement	**63.7**	**63.8**	**63.5**	**63.0**	**63.0**	**63.6**	**63.9**	**63.5**
Standard Deviation	7.2	6.6	7.1	10.2	7.4	6.7	7.5	1.1
Independent:								
No. of Institutions	38	35	37	43	43	45	44	41
No. of Individuals	122	150	143	184	211	227	211	178
Avg Age at Retirement	**64.8**	**64.9**	**65.3**	**65.4**	**65.5**	**65.2**	**65.6**	**65.3**
Standard Deviation	3.4	4.7	3.9	6.0	4.6	5.5	5.1	0.8

***Overall definitions:**
No. of Institutions--simple average
No. of Individuals--simple average
Average Age of Retirement--weighted average
Standard Deviation--standard deviation of the standard deviations

Figure 1
Average Ages at Retirement by Control of Institution, 1981-82 to 1987-88

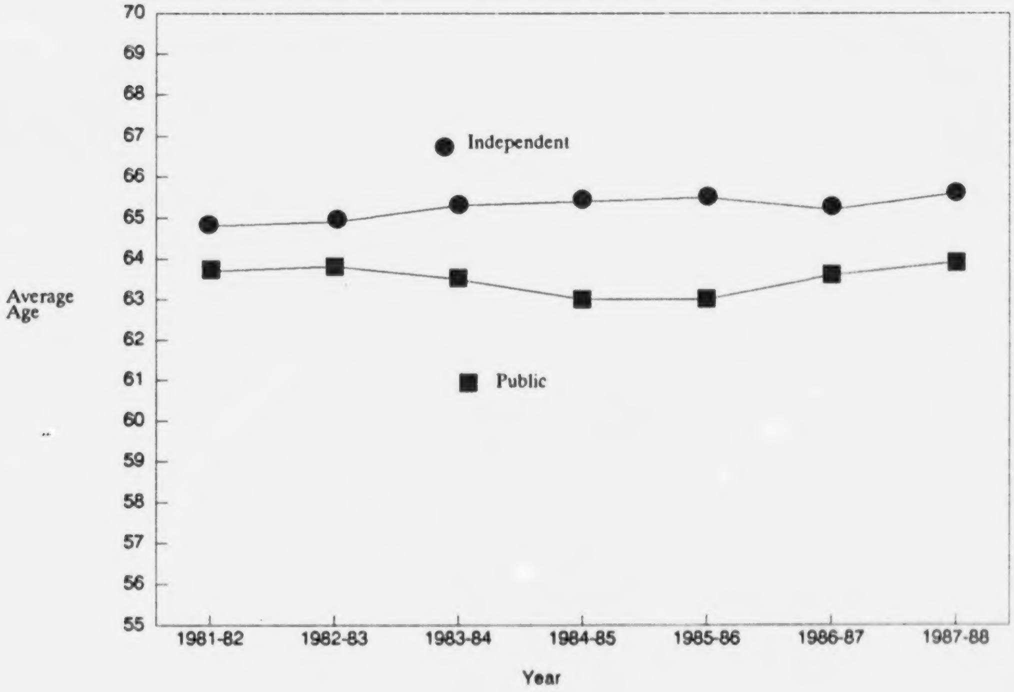

Table 10
Average Ages at Retirement by Level of Institution

Level	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
Baccalaureate:								
No. of Institutions	23	20	23	28	29	27	29	26
No. of Individuals	46	46	36	56	51	82	88	58
Avg Age at Retirement	**63.5**	**63.7**	**63.8**	**64.2**	**63.5**	**63.4**	**62.9**	**63.5**
Standard Deviation	3.3	3.7	3.2	5.3	3.5	3.5	4.0	0.7
Comprehensive:								
No. of Institutions	18	20	21	22	22	23	22	21
No. of Individuals	76	97	87	111	121	119	107	103
Avg Age at Retirement	**63.4**	**63.8**	**64.1**	**62.7**	**63.4**	**64.3**	**63.8**	**63.6**
Standard Deviation	4.9	3.6	5.3	8.9	7.3	5.6	6.7	1.6
Doctoral:								
No. of Institutions	23	25	26	26	27	27	28	26
No. of Individuals	226	326	372	415	421	415	471	378
Avg Age at Retirement	**64.5**	**64.3**	**64.0**	**64.0**	**64.1**	**64.3**	**64.8**	**64.3**
Standard Deviation	7.0	8.1	8.3	10.8	9.0	8.8	8.0	1.1

***Overall definitions:**
No. of Institutions--simple average
No. of Individuals--simple average
Average Age of Retirement--weighted average
Standard Deviation--standard deviation of the standard deviations

Table 11
Average Ages at Retirement by Control and Level

Control & Level	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
PUBLIC:								
Baccalaureate:								
No. of Institutions	9	11	13	13	14	12	14	12
No. of Individuals	20	24	20	24	27	48	54	31
Avg Age at Retirement	**61.8**	**62.7**	**63.1**	**63.6**	**63.2**	**63.1**	**62.4**	**62.8**
Standard Deviation	3.2	4.2	3.2	5.0	4.1	1.8	4.8	1.0
Comprehensive:								
No. of Institutions	6	7	7	7	8	7	7	7
No. of Individuals	33	52	48	71	62	57	54	54
Avg Age at Retirement	**62.1**	**62.9**	**62.9**	**61.1**	**61.3**	**63.7**	**62.1**	**62.2**
Standard Deviation	6.9	3.5	6.1	11.6	6.2	8.1	5.3	2.4
Doctoral:								
No. of Institutions	11	12	13	13	13	13	14	13
No. of Individuals	173	243	284	293	293	274	347	272
Avg Age at Retirement	**64.3**	**64.1**	**63.6**	**64.4**	**63.3**	**63.7**	**64.4**	**64.0**
Standard Deviation	8.6	9.1	10.2	12.6	9.9	8.9	9.0	1.3
INDEPENDENT:								
Baccalaureate:								
No. of Institutions	14	9	10	15	15	15	15	13
No. of Individuals	26	22	16	32	24	34	34	27
Avg Age at Retirement	**64.7**	**64.8**	**64.7**	**64.6**	**63.8**	**63.8**	**63.8**	**64.3**
Standard Deviation	2.0	1.6	3.0	5.7	2.8	4.5	2.9	1.3
Comprehensive:								
No. of Institutions	12	13	14	15	14	16	15	14
No. of Individuals	43	45	39	40	59	62	53	49
Avg Age at Retirement	**64.4**	**64.8**	**65.6**	**65.3**	**65.7**	**64.9**	**65.5**	**65.2**
Standard Deviation	2.5	2.8	3.8	5.5	4.6	4.1	5.7	1.1
Doctoral:								
No. of Institutions	12	13	13	13	14	14	14	13
No. of Individuals	53	83	88	112	128	131	124	103
Avg Age at Retirement	**65.3**	**64.9**	**65.3**	**65.7**	**65.7**	**65.7**	**66.1**	**65.6**
Standard Deviation	5.1	7.3	4.8	7.0	5.8	7.4	5.5	1.0

***Overall definitions:**
No. of Institutions--simple average
No. of Individuals--simple average
Average Age at Retirement--weighted average
Standard Deviation--standard deviation of the standard deviations

Type of Retirement Programs

Retirement plans in higher education frequently are described as either "defined benefit" or "defined contribution" programs.[4] Defined benefit plans are typical of state employee retirement systems while defined contribution plans are associated more often with private retirement programs, the best known of which is Teachers Insurance and Annuity Association - College Retirement Equities Fund (TIAA-CREF). According to King and Cook (1980):

> The *defined benefit* approach fixes benefits in advance as a percentage of salary for each year of service or, as in some industrial plans, a flat dollar amount per month or year of service. The *defined contribution* approach fixes contributions in advance as a percentage of each employee's salary, allocates these contributions to individual accounts, and pays benefits on the funds credited to each participant (p. 44).

In short, the former fixes benefits, while the latter fixes contributions.

Tables 12 through 15 provide information on the types of retirement plans available at the institutions in this study, and on the possible relationship between retirement age and program type.

Table 12 shows a distinct association between type of retirement program and institutional control. Of the 100 institutions providing information on their plan type(s), 14 offer *only* a defined benefit retirement program, and 12 of these are public institutions. In contrast, 63 colleges or universities offer *only* defined contribution programs; 55 of these are independent colleges and universities. Of the 23 institutions providing both defined benefit and defined contribution retirement programs, 22 are public. In other words, only 3 of 58 independent institutions offer a defined benefit retirement program alone or in combination with a defined contribution program.[5] Clearly, there is a strong relationship between control and type of retirement program offered.

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[4] Previous studies have examined the effects of defined benefit and defined contribution retirement programs on retirement age (Burkhauser and Quinn, 1989; Holden and Hansen, 1989). Holden and Hansen (1989), noting the difference in retirement trends between public and independent institutions, have developed cost analyses to assess whether type of retirement program may be one of the multiple factors influencing differences among institution types. Speculation regarding the possible role of pension plans upon retirement decisions also surfaced during a Washington, D.C. conference on "Pension Issues: A Challenge On-Campus" (1988).

[5] The Pearson-Product moment coefficient correlation (not shown) between institutional control (independent/public) and type of retirement program (defined-benefit/defined-contribution) is .642.

Table 12
Institutional Retirement Programs by Control of Institution, 1987-1988

Control	Defined Benefit	Defined Contribution	Both	Total
Public	12	8	22	42
Independent	2	55	1	58
TOTAL	14	63	23	100

	Chi-Square		
	d.f.	Value	Prob.
Control by Policy	2	60.37	0.000

Is there also a relationship between retirement age and type of retirement program? Tables 13-16 help answer this question by looking at overall averages and retirement ages under different programs. From 1981-82 through 1987-88, the average age of retirement has been essentially stable over time, ranging from 63.8 in 1984-85 to 64.4 in 1987-88 (Table 13).

However, as seen in Table 14, average ages at retirement do differ depending upon each institution's retirement program. Institutions offering only a defined benefit retirement program have an overall average retirement age of 63.1. Institutions offering only a defined contribution program show an average age of 65.3 years. The overall average age at retirement for institutions offering both types of retirement plans for the seven-year period is 62.7. Table 14 also shows 14 to 19 institutions in any given year with retirees in both types of programs.[6]

Table 15 distributes the retirements from the "both types" cohort to the appropriate defined benefit or defined contribution category.[7] For each of the years from 1981-82 to 1987-88, participants in defined-contribution programs retired at least one and often two years later than those in defined benefit plans. The weighted average ages of retirement for the seven-year period were 62.8 for defined-benefit and 65.0 for defined-contribution retirees.

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[6] Number of institutions varies because not every institution has retirements every year.

[7] Not all institutions reporting that they offered two types of programs were able to provide the numbers and ages of retirees by program; hence, the totals for Table 15 are less than for Table 14.

Table 13
Average Ages at Retirement

	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
No. of Institutions	64	65	70	76	78	77	79	73
No. of Individuals	348	469	495	572	593	606	666	536
Avg Age at Retirement	**64.1**	**64.2**	**64.0**	**63.8**	**63.9**	**64.2**	**64.4**	**64.1**
Standard Deviation	5.4	5.8	6.0	8.6	6.8	6.4	6.6	1.0

Table 14
Average Ages at Retirement by Institution's 1987-88 Retirement Plan

Type of Plan	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
Defined Benefit:								
No. of Institutions	9	9	11	10	10	8	11	10
No. of Individuals	33	52	72	87	74	69	94	69
Avg Age at Retirement	**62.7**	**64.0**	**62.8**	**63.2**	**62.6**	**64.0**	**62.4**	**63.1**
Standard Deviation	3.5	5.0	4.1	4.8	6.5	8.5	6.6	1.6
Defined Contribution:								
No. of Institutions	41	40	43	49	50	50	49	46
No. of Individuals	169	224	237	257	299	323	312	224
Avg Age at Retirement	**65.1**	**65.1**	**65.4**	**65.4**	**65.3**	**65.1**	**65.6**	**65.3**
Standard Deviation	3.6	4.6	4.2	6.0	4.7	5.3	5.6	0.8
Both Types:								
No. of Institutions	14	16	16	17	18	19	19	17
No. of Individuals	146	193	186	228	220	214	214	200
Avg Age at Retirement	**63.2**	**63.1**	**62.7**	**62.1**	**62.5**	**62.9**	**62.9**	**62.7**
Standard Deviation	8.0	6.5	6.9	11.9	7.3	5.6	5.6	2.0

Table 15
Average Ages at Retirement by Retiree's Retirement Plan

Type of Plan	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
Defined Benefit:								
No. of Institutions	16	16	19	19	18	18	21	8
No. of Individuals	90	127	167	193	197	177	234	169
Avg Age at Retirement	**63.6**	**63.5**	**62.7**	**62.6**	**62.2**	**63.1**	**62.8**	**62.8**
Standard Deviation	5.6	4.8	4.8	7.9	6.8	7.4	5.6	1.1
Defined Contribution:								
No. of Institutions	45	45	51	55	56	58	57	52
No. of Individuals	180	249	271	294	334	355	346	290
Avg Age at Retirement	**64.7**	**65.0**	**64.9**	**64.7**	**65.0**	**64.9**	**65.4**	**65.0**
Standard Deviation	5.3	4.7	5.7	8.8	5.4	5.3	5.7	1.2

***Overall definitions:**

No. of Institutions--simple average

No. of Individuals--simple average

Average Age at Retirement--weighted average

Standard Deviation--standard deviation of the standard deviations

In order to separate the institutional control effect, separate average retirement age calculations were developed for all retirees by both plan and institutional type. As shown in Table 16, the average retirement age among public institution retirees is one and one-half years lower for defined benefit retirees, 62.8, than for defined contribution retirees, 64.5. The number of independent defined benefit retirees (7) is too small to make comparisons in the independent sector.

Table 16
Average Ages at Retirement by Retirement Plan and by Institution Type, 1981-82 to 1987-88

	Defined Benefit		Defined Contribution	
	Avg Age	N	Avg Age	N
Public Doctoral	63.0	768	64.6	708
Public Comprehensive	62.5	275	62.2	11
Public Baccalaureate	62.4	135	63.6	68
All Public	62.8	1178	64.5	787
Independent Doctoral	--	0	65.6	719
Independent Comprehensive	--	0	65.2	341
Independent Baccalaureate	64.9	7	64.2	182
All Independent	64.9	7	65.3	1242

Age of Current Faculty

The institutional survey collected information on the number of faculty members, by both age and discipline cluster, for the 101 participating institutions. For 1987-88, there were 35,336 active full-time faculty in these institutions. (See Appendix D for a presentation of these data by individual age, discipline cluster, institutional control and level.)

Tables 17 through 22 collapse the age groups for current faculty into four age cohorts: (a) under 55; (b) 55-59; (c) 60-64; and (d) 65 and older. The data are presented for all institutions as well as by level and type of institution.

The youngest faculty are in computer and information sciences, business, health sciences, home economics, and recreation, with 80 percent or more under age 55. The oldest faculty, with 14 percent or more age 60 and over, are in languages and letters, library science, life sciences, and science technologies. A comparison of Tables 18 and 19 with Table 17 shows that institutional control makes little difference in the age distribution of disciplines.

Table 17
Faculty Members by Age Cohort and Discipline Cluster, All Institutions, 1987-88

	Under 55		55-59		60-64		65 & Older		Total	
Discipline Cluster [1]	#	%	#	%	#	%	#	%	#	%
Agriculture	883	73	196	16	95	8	43	4	1217	100
Architecture & Design	228	77	29	10	26	9	12	4	295	100
Languages & Letters	3690	72	639	13	502	10	263	5	5094	100
Business	2100	83	186	7	151	6	91	4	2528	100
Computer & Info Sciences	422	89	33	7	17	4	4	1	476	100
Education	1818	72	417	17	215	9	73	3	2523	100
Engineering	1839	75	292	12	218	9	110	4	2459	100
Health Sciences	3571	82	403	9	263	6	125	3	4362	100
Home Economics	236	83	30	10	17	6	3	1	286	100
Law	527	80	71	11	27	4	34	5	659	100
Library Science	250	74	36	11	42	12	9	3	337	100
Life Sciences	1405	72	268	14	196	10	81	4	1950	100
Math & Physical Sciences	2942	76	485	12	307	8	161	4	3895	100
Recreation	191	80	28	12	16	7	3	1	238	100
Science Technologies	9	69	2	15	0	0	2	15	13	100
Social Sciences & Psych	3934	75	610	12	443	8	232	4	5219	100
Visual & Performing Arts	1590	73	319	15	177	8	101	5	2187	100
Other	1170	73	209	13	155	10	64	4	1598	100
Total	26805	76	4253	12	2867	8	1411	4	35336	100

Table 18
Faculty Members by Age Cohort and Discipline Cluster, Public Institutions, 1987-88

	Under 55		55-59		60-64		65 & Older		Total	
Discipline Cluster [1]	#	%	#	%	#	%	#	%	#	%
Agriculture	871	73	194	16	93	8	39	3	1197	100
Architecture & Design	192	79	20	8	23	9	8	3	243	100
Languages & Letters	1911	73	330	13	247	9	114	4	2602	100
Business	1118	83	107	8	75	6	43	3	1343	100
Computer & Info Sciences	304	89	21	6	13	4	3	1	341	100
Education	1428	72	336	17	175	9	51	3	1990	100
Engineering	1308	76	204	12	146	8	69	4	1727	100
Health Sciences	2473	83	265	9	153	5	79	3	2970	100
Home Economics	210	86	21	9	11	4	3	1	245	100
Law	222	84	20	8	7	3	14	5	263	100
Library Science	198	73	34	13	35	13	5	2	272	100
Life Sciences	1007	72	201	14	140	10	54	4	1402	100
Math & Physical Sciences	1919	76	314	12	196	8	88	3	2517	100
Recreation	124	79	22	14	10	6	0	0	156	100
Science Technologies	4	67	1	17	0	0	1	17	6	100
Social Sciences & Psych	2546	76	379	11	282	8	137	4	3344	100
Visual & Performing Arts	1018	72	216	15	117	8	59	4	1410	100
Other	869	74	161	14	103	9	39	3	1172	100
Total	17722	76	2846	12	1826	8	806	3	23200	100

[1]See Table 32 for detail on these classifications.

Table 19
Faculty Members by Age Cohort and Discipline Cluster, Independent Institutions, 1987-88

	Under 55		55-59		60-64		65 & Older		Total	
Discipline Cluster[1]	#	%	#	%	#	%	#	%	#	%
Agriculture	12	60	2	10	2	10	4	20	20	100
Architecture & Design	36	69	9	17	3	6	4	8	52	100
Languages & Letters	1779	71	309	12	255	10	149	6	2492	100
Business	982	83	79	7	76	6	48	4	1185	100
Computer & Info Sciences	118	87	12	9	4	3	1	1	135	100
Education	390	73	81	15	40	8	22	4	533	100
Engineering	531	73	88	12	72	10	41	6	732	100
Health Sciences	1098	79	138	10	110	8	46	3	1392	100
Home Economics	26	63	9	22	6	15	0	0	41	100
Law	305	77	51	13	20	5	20	5	396	100
Library Science	52	80	2	3	7	11	4	6	65	100
Life Sciences	398	73	67	12	56	10	27	5	548	100
Math & Physical Sciences	1023	74	171	12	111	8	73	5	1378	100
Recreation	67	82	6	7	6	7	3	4	82	100
Science Technologies	5	71	1	14	0	0	1	14	7	100
Social Sciences & Psych	1388	74	231	12	161	9	95	5	1875	100
Visual & Performing Arts	572	74	103	13	60	8	42	5	777	100
Other	301	71	48	11	52	12	25	6	426	100
Total	9083	75	1407	12	1041	9	605	5	12136	100

Table 20
Faculty Members by Age Cohort and Discipline Cluster, Baccalaureate Institutions, 1987-88

	Under 55		55-59		60-64		65 & Older		Total	
Discipline Cluster [1]	#	%	#	%	#	%	#	%	#	%
Agriculture	9	90	0	0	1	10	0	0	10	100
Architecture & Design	7	100	0	0	0	0	0	0	7	100
Languages & Letters	607	77	86	11	57	7	34	4	784	100
Business	281	78	40	11	29	8	11	3	361	100
Computer & Info Sciences	69	93	3	4	2	3	0	0	74	100
Education	270	77	50	14	27	8	5	1	352	100
Engineering	102	78	12	9	13	10	3	2	130	100
Health Sciences	149	86	13	7	7	4	5	3	174	100
Home Economics	8	67	4	33	0	0	0	0	12	100
Law	1	100	0	0	0	0	0	0	1	100
Library Science	26	84	1	35	2	6	2	6	31	100
Life Sciences	139	72	25	13	20	10	8	4	192	100
Math & Physical Sciences	414	79	62	12	34	6	16	3	526	100
Recreation	69	85	5	6	7	9	0	0	81	100
Science Technologies	5	63	2	25	0	0	1	13	8	100
Social Sciences & Psych	556	80	69	10	49	7	19	3	693	100
Visual & Performing Arts	269	76	53	15	23	6	10	3	355	100
Other	120	75	28	17	12	7	1	1	161	100
Total	3101	78	453	11	283	7	115	3	3952	100

[1] See Table 32 for detail on these classifications.

Somewhat greater differences in age distributions by discipline are apparent among baccalaureate, comprehensive and doctoral colleges and universities. Table 20 shows that faculty are youngest at baccalaureate institutions, with 78 percent under age 55. Tables 21 and 22 indicate that the proportion of younger faculty in the fields of education, social sciences and psychology, and the visual and performing arts tends to be lower at baccalaureate than at comprehensive and doctoral institutions. The baccalaureate institutions also have the highest proportion--93 percent--of computer and information sciences faculty under age 55. In the field of business, the highest proportion, 85 percent, of younger faculty are in doctoral institutions compared to 78 percent in baccalaureate institutions and 70 percent in comprehensive institutions.

Table 21
Faculty Members by Age Cohort and Discipline Cluster, Comprehensive Institutions, 1987-88

	Under 55		55-59		60-64		65 & Older		Total	
Discipline Cluster [1]	#	%	#	%	#	%	#	%	#	%
Agriculture	0	0	0	0	0	0	0	0	0	100
Architecture & Design	0	0	0	0	0	0	0	0	0	100
Languages & Letters	731	69	164	15	116	11	54	5	1065	100
Business	551	81	52	8	52	8	26	4	681	100
Computer & Info Sciences	102	87	11	9	4	3	0	0	117	100
Education	404	70	109	19	49	8	15	3	577	100
Engineering	117	75	22	14	10	6	8	5	157	100
Health Sciences	199	82	28	12	11	5	5	2	243	100
Home Economics	8	89	1	11	0	0	0	0	9	100
Law	95	79	17	14	0	0	8	7	120	100
Library Science	48	75	7	11	8	13	1	2	64	100
Life Sciences	179	71	36	14	27	11	11	4	253	100
Math & Physical Sciences	473	77	82	13	43	7	20	3	618	100
Recreation	40	83	3	6	3	6	2	4	48	100
Science Technologies	0	0	0	0	0	0	0	0	0	100
Social Sciences & Psych	620	74	109	13	75	9	39	5	843	100
Visual & Performing Arts	284	71	68	17	32	8	14	4	398	100
Other	206	76	30	11	24	9	11	4	271	100
Total	4057	74	739	14	454	8	214	4	5464	100

[1] See Table 32 for detail on these classifications.

Table 22
Faculty Members by Age Cohort and Discipline Cluster, Doctoral Institutions, 1987-88

	Under 55		55-59		60-64		65 & Older		Total	
Discipline Cluster[1]	#	%	#	%	#	%	#	%	#	%
Agriculture	874	72	196	16	94	8	43	4	1207	100
Architecture & Design	221	77	29	10	26	9	12	4	288	100
Languages & Letters	2352	72	389	12	329	10	175	5	3245	100
Business	1268	85	94	6	70	5	54	4	1486	100
Computer & Info Sciences	251	88	19	7	11	4	4	1	285	100
Education	1144	72	258	16	139	9	53	3	1594	100
Engineering	1620	75	258	12	195	9	99	5	2172	100
Health Sciences	3223	82	362	9	245	6	115	3	3945	100
Home Economics	220	83	25	9	17	6	3	1	265	100
Law	431	80	54	10	27	5	26	5	538	100
Library Science	176	73	28	12	32	13	6	2	242	100
Life Sciences	1087	72	207	14	149	10	62	4	1505	100
Math & Physical Sciences	2055	75	341	12	230	8	125	5	2751	100
Recreation	82	75	20	18	6	6	1	1	109	100
Science Technologies	4	80	0	0	0	0	1	20	5	100
Social Sciences & Psych	2758	75	432	12	319	9	174	5	3683	100
Visual & Performing Arts	1037	72	198	14	122	9	77	5	1434	100
Other	844	72	151	13	119	10	52	4	1166	100
Total	19647	76	3061	12	2130	8	1082	4	25920	100

[1] See Table 32 for detail on these classifications.

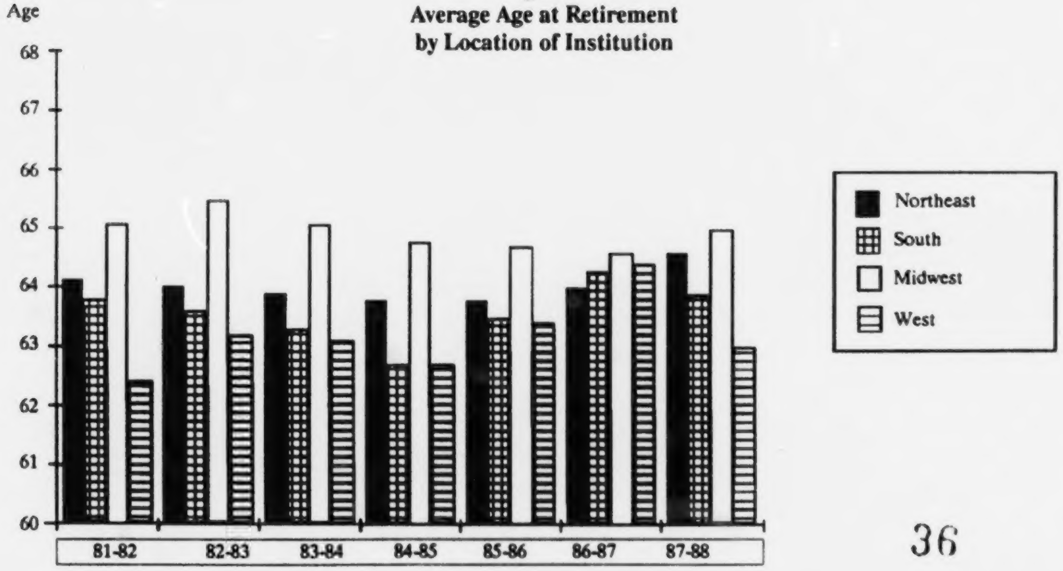
Table 23 and Figure 2 show differences in average age of retirement by location. Year-by-year and overall seven-year average retirement ages were highest in the Northeast and Midwest, with overall averages of 64.0 and 64.9, and lowest in the South and West, with overall averages of 63.6 and 63.2. These regional differences are partially a reflection of how types of institutions are distributed geographically. The southern and western states have large numbers of public colleges and universities, and public institutions typically report faculty retiring at an earlier age than do independent institutions.

Table 23
Average Ages at Retirement by Location of Institution

Location	81-82	82-83	83-84	84-85	85-86	86-87	87-88	Overall*
Northeast:								
No. of Institutions	34	31	30	36	36	40	39	35
No. of Individuals	189	231	218	281	280	301	314	259
Avg Age at Retirement	**64.1**	**64.0**	**63.9**	**63.8**	**63.8**	**64.0**	**64.6**	**64.0**
Standard Deviation	5.6	6.2	6.2	8.9	8.3	6.9	6.3	1.1
South:								
No. of Institutions	10	14	19	18	21	18	20	17
No. of Individuals	63	83	115	105	133	117	154	110
Avg Age at Retirement	**63.8**	**63.6**	**63.3**	**62.7**	**63.5**	**64.3**	**63.9**	**63.6**
Standard Deviation	5.9	5.3	5.6	10.2	5.1	6.0	6.7	1.6
Midwest:								
No. of Institutions	14	15	14	17	15	14	15	15
No. of Individuals	66	104	134	148	129	147	148	125
Avg Age at Retirement	**65.1**	**65.5**	**65.1**	**64.8**	**64.7**	**64.6**	**65.0**	**64.9**
Standard Deviation	3.9	4.6	5.6	6.2	4.7	5.1	7.1	1.0
West:								
No. of Institutions	6	5	7	5	6	5	5	6
No. of Individuals	30	51	28	38	51	41	50	41
Avg Age at Retirement	**62.4**	**63.2**	**63.1**	**62.7**	**63.4**	**64.4**	**63.0**	**63.2**
Standard Deviation	4.7	2.2	5.4	3.2	7.2	7.5	7.0	1.9

***Overall definitions:**
No. of Institutions--simple average
No. of Individuals--simple average
Average Age at Retirement--weighted average
Standard Deviation--standard deviation of the standard deviations

Figure 2
Average Age at Retirement
by Location of Institution



Effect of Mandatory Retirement Policy on Retirement Decisions

Data collected by the institutional survey indicate that over 70 percent of the institutions in the study continued to mandate retirement on the basis of age in 1987-88 (Tables 5 and 6). Data collected by the individual separator survey provide information on whether these policies were an important factor in retirees' decision to retire (Tables 24, 25, and 26). Eighty percent of the respondents state that mandatory retirement was *not* a significant factor in their decision to retire.

The remaining 20 percent indicating mandatory retirement policies were important are distributed differently on the basis of institutional control, on the basis of institutional level, and on the basis of age. Tables 24 and 25 show that a higher proportion of faculty from independents (25 percent) than publics (18 percent) state that mandatory retirement policies were relevant. Likewise, higher proportions of faculty from comprehensive (19 percent) and doctoral (23 percent) institutions than baccalaureates (8 percent) say that mandatory retirement was a relevant factor. Not surprisingly, Table 26 shows that age makes a significant difference. The individuals who most often report that mandatory retirement was an important factor were those age 70 or older.

Table 24
Importance of Mandatory Retirement in Separators' Decision to Retire by Control of Institution

	Mandatory Retirement		
	Important:		Total
Control	Yes	No	
Public	56	264	320
Independent	45	135	180
TOTAL	101	399	500

	Chi-Square		
	d.f.	Value	Prob.
Control by Decision	1	4.020	0.045

Table 25
Importance of Mandatory Retirement in Separators' Decision to Retire by Level of Institution

	Mandatory Retirement		
	Important:		Total
Level	Yes	No	
Baccalaureate	5	55	60
Comprehensive	15	66	81
Doctoral	81	278	359
TOTAL	101	399	500

	Chi-Square		
	d.f.	Value	Prob.
Level by Decision	2	6.627	0.036

Table 26
Importance of Mandatory Retirement in Retirees' Decision to Retire by Age of Retiree

	Mandatory Retirement		
	Important:		
Age	Yes	No	Total
55 or less	27	27	0
56	0	8	8
57	0	10	10
58	0	11	11
59	0	7	7
60	0	26	26
61	2	16	18
62	3	62	65
63	0	31	31
64	0	20	20
65	6	84	90
66	2	33	35
67	2	23	25
68	2	17	19
69	2	12	14
70 or older	82	12	94
TOTAL	101	399	500

	Chi-Square		
	d.f.	Value	Prob.
Age by decision	15	326.69	0.000

Retirees who reported that a mandatory retirement policy was an important factor also were asked the age to which they would have continued working in the absence of such a policy. Table 27 distributes 74 responses as follows: 27 percent at 70; 18 percent between 71 and 74 years of age; 43 percent at 75; and 12 percent beyond age 75.

Table 27
Age To Which Retirees Would Have Worked
Had Mandatory Retirement Not Been a Factor

Would have worked until age....	Number	Percent
70	20	27.0%
71-74	13	17.6%
75	32	43.2%
75 +	9	12.2%
Total	74	100.0%

Factors Influencing Retirement Decisions

Respondents indicated on a Likert scale the importance of 18 factors in their decision to retire. Table 28 provides the average score for each factor. The two most important factors influencing retirement decisions relate to finances. While many factors play a role in the retirement decision, the overriding concern among faculty retirees is their financial condition upon retirement.

Table 28
Factors in Retirees' Retirement Planning (1 = Not Important, 6 = Very Important)

Factor	Avg	Number of Respondents
Overall financial status	4.4	499
Eligibility for full retirement benefits	4.4	490
Desirability of more personal/family time	4.1	500
Other interests	3.5	491
Working conditions and policies	2.9	499
Availability of early retirement incentive benefits	2.6	486
Personal health	2.5	499
Annual salary increases	2.2	496
Availability of emeritus benefits	2.2	491
Mandatory retirement policies	2.1	503
Other employment opportunities, incl. self-employment	2.0	485
Health of a spouse	1.9	486
Administrative pressure	1.8	495
State of the economy	1.8	492
Interaction with co-workers	1.7	495
Budget cutbacks	1.7	496
Curricular revision	1.6	496
Timing of spouse's retirement	1.5	485

Table 29 provides a more detailed distribution of the averages summarized in Table 28. This shows that even the three most highly rated factors were not important at all to approximately one-fifth of the respondents. It also shows that respondents were clearly divided on the importance of two factors in their decision to retire: availability of early retirement incentive benefits and mandatory retirement policies. Sixty percent of the respondents indicate that the availability of early retirement incentive benefits was not an important variable in their retirement decisions. However, for 20 percent of the respondents, these incentive programs were a very important factor. Similarly, while 71 percent indicate that mandatory retirement policies were not important, 17 percent indicate that this was a very important factor. Consistent with the findings in Table 26, this 17 percent consists mostly of individuals who, because they had turned 70, were required to retire under current policy.

Table 29
Distribution of Responses on the Importance of Factors in Retirees' Retirement Planning (1 = Not Important, 6 = Very Important)

	1		2		3		4		5		6		Total	
Factor	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Overall financial status	76	15	8	2	31	6	81	16	119	24	184	37	499	100
Eligibility for full retirement benefits	98	20	17	3	22	4	47	10	60	12	246	50	490	100
Desirability of more personal/family time	96	19	29	6	45	9	70	14	101	2	159	32	500	100
Other interests	135	27	32	7	54	11	96	20	83	17	91	19	491	100
Working conditions and policies	220	44	39	8	43	9	57	11	58	12	82	16	499	100
Availability of early retirement incentive benefits	293	60	11	2	20	4	25	5	40	8	97	20	486	100
Personal health	269	54	37	7	37	7	42	8	43	9	71	14	499	100
Annual salary increases	290	58	41	8	45	9	39	8	42	8	39	8	496	100
Availability of emeritus benefits	305	62	30	6	28	6	45	9	33	7	50	10	491	100
Mandatory retirement policies	359	71	18	4	18	4	11	2	10	2	87	17	503	100
Other employment opportunities, incl. self-employment	330	68	32	7	19	4	32	7	30	6	42	9	485	100
Health of a spouse	338	70	40	8	27	6	27	6	18	4	36	7	486	100
Administrative pressure	364	74	29	6	26	5	21	4	15	3	40	8	495	100
State of the economy	333	68	46	9	44	9	27	5	27	5	15	3	492	100
Interaction with co-workers	363	73	39	8	22	4	28	6	25	5	18	4	495	100
Budget cutbacks	375	76	31	6	29	6	18	4	26	5	17	3	496	100
Curricular revision	393	79	23	5	32	6	16	3	18	4	14	3	496	100
Timing of spouse's retirement	406	84	14	3	17	4	15	3	16	3	17	4	485	100

Appendix E shows the results of a chi-square analysis of each of the 18 factors against discipline. Statistically significant relationships are found for four factors: (a) desirability of more personal/family time; (b) working conditions and policies; (c) state of the economy; and (d) budget cutbacks.

Table 30 permits analysis of the discipline differences for these 18 factors. There are three disciplinary groups for which ratings differ markedly from overall responses. Agriculture faculty are more concerned than respondents in other disciplines about general working conditions and policies and about budget cutbacks. This probably relates to reductions in federal support for agriculture. Education faculty are more concerned than the average respondent about the general state of the economy and about personal and family time. Library science faculty, along with agriculture faculty, are concerned about working conditions and policies. In addition, library science faculty do not view other employment opportunities as a critical factor in their retirement planning. One possible explanation might be that college and university library science faculty have few other employment options.

Table 30
Factors in Retirees' Retirement Planning: Average Importance by Discipline
(1 = Not Important, 6 = Very Important)

	Total Avg	Agri	Arts/ Arch	Busi	Let / Lang	Educ	Engin	Heal Sci	Lib Sci	Phys Sci	Behav Sci	Other
Overall financial status	4.4	4.5	4.7	4.6	4.1	4.6	4.4	5.0	4.1	4.3	4.4	4.4
Eligibility for full retirement benefits	4.4	5.2	4.8	4.4	4.3	4.7	4.4	4.4	4.8	3.9	4.2	5.2
Desirability of more personal/family time	4.1	4.4	3.9	4.3	4.0	4.6	4.4	4.0	4.3	3.8	3.8	4.2
Other interests	3.5	3.5	3.5	3.2	3.6	4.2	3.4	3.0	3.3	3.4	3.5	3.5
Working conditions and policies	2.9	3.9	2.6	3.1	2.4	3.4	2.4	3.4	4.4	2.8	2.9	2.1
Availability of early ret incentive benefits	2.6	1.7	3.0	2.6	2.7	2.9	2.2	2.2	2.4	2.8	2.7	2.0
Personal health	2.5	2.2	2.2	2.6	2.4	3.0	3.1	2.5	3.1	2.4	2.3	2.5
Annual salary increases	2.2	2.6	2.5	2.3	1.7	2.7	2.1	2.5	2.7	2.3	2.0	2.2
Availability of emeritus benefits	2.2	2.2	2.6	1.8	2.2	2.3	2.1	2.3	1.6	2.3	2.0	2.7
Mandatory retirement policies	2.1	1.5	1.8	2.0	2.5	1.8	2.0	1.9	2.5	2.3	2.3	2.2
Other employment opport., incl. self-empl.	2.0	2.0	2.7	1.9	1.9	2.2	2.3	2.5	1.0	1.7	1.8	2.3
Health of a spouse	1.9	2.3	1.4	2.4	1.7	2.2	2.2	1.9	1.5	2.1	1.3	2.2
Administrative pressure	1.8	2.0	1.6	1.8	1.8	2.2	1.3	2.3	1.9	1.9	1.6	1.4
State of the economy	1.8	1.8	1.8	1.7	1.4	2.6	1.9	2.1	1.7	1.7	1.5	2.1
Interaction with co-workers	1.7	1.7	1.8	1.5	1.6	1.9	1.5	2.0	1.9	1.6	1.8	1.4
Budget cutbacks	1.7	2.7	1.9	1.4	1.3	2.1	1.2	1.9	2.2	1.5	1.5	1.6
Curricular revision	1.6	1.7	1.6	1.6	1.7	1.6	1.4	1.8	1.2	1.5	1.4	1.5
Timing of spouse's retirement	1.5	1.3	1.5	1.7	1.4	1.6	1.5	1.3	1.4	1.5	1.5	1.9

Separate analyses of the retirement decision factors by gender (Appendix E) identify four statistically significant variables: (a) other interests; (b) working conditions and policies; (c) administrative pressure; and (d) interaction with co-workers. Three of these factors relate directly to the work environment, while the fourth, other interests, can be viewed as an alternative to an unsatisfactory work environment.

Table 31 shows the extent to which the male and female responses differ. The male average and the overall average typically correspond because of the significantly greater proportion of males in the retirement sample. Among the four decision factors in which the distribution of responses differed significantly by gender, the greatest variability between the male and female responses is on working conditions and policies. Female faculty members more than male faculty members indicate that working conditions and policies were important factors affecting their retirement decisions.

Table 31
Factors in Retirees' Retirement Planning: Average Importance by Gender
(1 = Not Important, 6 = Very Important)

	Overall	MALE		FEMALE	
Factor	Avg	Avg	N	Avg	N
Overall financial status	4.4	4.4	413	4.5	78
Eligibility for full retirement benefits	4.4	4.4	407	4.3	75
Desirability of more personal/family time	4.1	4.0	414	4.1	77
Other interests	3.5	3.5	407	3.5	76
Working conditions and policies	2.9	2.8	415	3.4	76
Availability of early ret incentive benefits	2.6	2.5	405	2.7	73
Personal health	2.5	2.5	415	2.5	76
Annual salary increases	2.2	2.2	414	2.3	74
Availability of emeritus benefits	2.2	2.2	408	2.2	75
Mandatory retirement policies	2.1	2.1	419	2.1	76
Other employment opportunities incl. self-empl.	2.0	2.0	403	1.9	74
Health of a spouse	1.9	1.9	405	1.6	73
Administrative pressure	1.8	1.8	412	2.2	75
State of the economy	1.8	1.7	409	2.1	75
Interaction with co-workers	1.7	1.7	412	2.0	75
Budget cutbacks	1.7	1.6	413	1.9	75
Curricular revision	1.6	1.5	413	1.8	75
Timing of spouse's retirement	1.5	1.5	403	1.6	74

IV. PROJECTIONS

HIGHLIGHTS

- *Across disciplines, the largest number of retirements over the next 15 years are projected to occur from 1998 through 2002-03.*
- *Using 1987-88 as a base, the projected increase in the number of retirements in 2002-03 varies according to three survival rate scenarios.*

  High survival rate:44 percent increase;

  Standard survival rate: 24 percent increase;

  Low survival rate: 9 percent increase.
- *Retirement projections vary by discipline.*

  Languages and letters: currently experiencing peak retirements, 1988-89 through 1992-93;

  Social sciences and psychology: expected to remain stable;

  Mathematical and physical sciences: projected to increase moderately but steadily to 2002-03;

  Life sciences: projections increase through the mid-1990s and return to current levels to 2002-03.
- *The greatest number of retirement replacements will be needed in the humanities and social sciences.*

Modeling Faculty Retirements

Several recent studies (Bowen and Sosa, 1989; Lozier and Dooris, 1988; COFHE, 1987; Connellan, 1987) have projected faculty retirement and/or replacement rates for the next 10 to 15 years. While those reports have helped improve higher education's understanding of current developments in the academic labor market, they also have underscored the paucity of reliable, detailed information suitable for rigorous modeling.

This report analyzes the two sets of institutional data that were collected from participating colleges and universities for the purpose of projecting faculty retirements. The first data set provides the age distribution of approximately 35,000 current faculty, and the second describes the age distribution of approximately 700 faculty retirees, as collected from the 101 institutions surveyed.

Table 32 summarizes the respective numbers of faculty members and faculty retirements by discipline cluster (for the complete age distributions by discipline, see Appendices F and G). The data sets in Appendices F and G have been combined in Table 33 to calculate actual retirement rates, by age, for the 101 participating colleges and universities in 1987-88.

The projection of faculty retirements through the year 2003 (Tables 34 and 35) are based on these retirement rates. While the projections require extensive calculations, they are based on a straightforward concept

Table 32
Number of Faculty Members and Faculty Retirements by Discipline Cluster and by CIP Category, 1987-88 [1]

Discipline Cluster and CIP Description	# of faculty members	# of retirements
Agriculture 01 Agribusiness/Agricultural Production 02 Agricultural Sciences 03 Renewable Natural Resources	1217	41
Architecture & Design 04 Architecture & Environmental Design	295	10
Languages & Letters 05 Area & Ethnic Studies 16 Foreign Languages 23 Letters 24 Liberal/General Studies 38 Philosophy & Religion 39 Theology	5094	115
Business 06 Business & Management, General 07 Business - Administrative Support 08 Marketing & Distribution	2528	45
Computer & Info Sciences 11 Computer & Information Sciences	476	6
Education 13 Education 21 Industrial Arts	2523	79
Engineering 14 Engineering 15 Engineering & Related Technologies	2459	37
Health Sciences 17 Allied Health 18 Health Sciences 34 Health Related	4362	70
Home Economics 19 Home Economics 20 Vocational Home Economics	286	3
Law 22 Law	659	14
Library Science 25 Library Science	337	12
Life Sciences 26 Life Sciences	1950	51
Math & Physical Sciences 27 Mathematics 40 Physical Sciences	3895	83
Recreation 31 Parks & Recreation 36 Leisure & Recreation Skills	238	4
Science Technologies 41 Science Technologies		13
Social Sciences & Psychology 42 Psychology 43 Protective Services 44 Public Affairs 45 Social Sciences	5219	94
Visual & Performing Arts 50 Visual & Performing Arts	2187	40
Other All Other CIP Codes	1598	35
TOTAL	35336	739

[1] CIP Codes and descriptions are drawn from the federal Classification of Instructional Programs.

Table 33
Faculty Retirement and Retirement-Survival Rates by Age, All Institutions, 1987-88 [1]

	50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70+	Total
No. of Faculty	4,254	941	922	850	780	760	664	641	592	503	467	393	314	230	156	146	172	12,785
No. of Retires	14	18	9	15	11	14	40	38	84	54	47	112	60	40	30	26	127	739
Retirement Rate	0.003	0.019	0.010	0.018	0.014	0.018	0.060	0.059	0.142	0.107	0.101	0.285	0.191	0.174	0.192	0.178	0.738	0.058
Survival Rate	0.997	0.981	0.990	0.982	0.986	0.982	0.940	0.941	0.858	0.893	0.899	0.715	0.809	0.826	0.808	0.822	0.262	0.942

[1] This is a summary table of data from Appendices F and G. Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H.

of faculty flow (see Appendix H). For a given year, the number of faculty in the system at year-end must equal the number at the beginning of the year, plus new entries, and less any exits.

Retirements are one form of exit, along with others such as death, disability, or voluntary career change:

Ending number of faculty = Beginning + Entries - Retirements - Other Exits

This equation can be reordered and used in faculty retirement projections:

Retirements = Beginning + Entries - Other Exits - Ending number of faculty.

Survival and Transition Assumptions

The model described above represents faculty flows at the national market level. It does not take into account movements from one institution to another. Survey data were collected on the post-separation activities of faculty in order to determine what portion of retired faculty surveyed went on to other employment opportunities, within and outside of academe (see Appendix I for the employment status of retired separators).

The flow of older faculty is probably more influenced by retirements than by any other single form of entry or exit. Other considerations such as job market entry, career moves to business or government, deaths, and so on, appear to exert less leverage on aggregate employment and retirement patterns for faculty in their 50s and 60s (Bowen and Sosa, 1989). However, the impact of such transition factors on overall faculty flows and levels and on long-term predictions about faculty retirements cannot be dismissed. The model created in this study therefore incorporates a transition factor to account for older professors who do not retire but who exit the college and university employment sector through some other avenue.

As noted by Bowen and Sosa (1989), precise quit rates are not known and are difficult to estimate. Various studies led them to estimate non-retirement exit rates for older, tenured faculty to be one-half to two percent. These are the most convincing estimates with which we are familiar. They also appear to be generally consistent with Bowen and Schuster's 1986 review.

Because quit rates are not known precisely, faculty retirements are modeled here under three sets of transition assumptions. Appendix H contains projections under three survival rate scenarios. The "high" survival scenario is based on the assumption that all faculty over age 50 who separate in a given year do so through retirement. This assumption is used not because we expect it to occur, but because it establishes an upper limit for the model's projections. The "standard" survival scenario assumes that 1 percent of faculty between the ages of 50 and 64 exit for reasons such as death and voluntary terminations, and that 2 percent of the faculty age 65 or older exit the model through such non-retirement transitions. These assumptions most closely reflect current information about retirement and non-retirement exits of older faculty. The "low" survival-to-retirement scenario assumes non-retirement exit rates of 2 percent and 3 percent for faculty aged 50 through 64, and 65 and beyond.

Projected Retirements for All Disciplines

Table 34 is a summary of tables in Appendix H and shows annual faculty retirement projections for 1988-89 to 2002-03 under the high, standard, and low survival rate assumptions.

Table 34
Projected Faculty Retirements Under Various Survival Rate Assumptions, 1988-89 to 2002-03 [1]

	(A)			(B)			(C)		
	HIGH			STANDARD			LOW		
Year	Rets	5-Yr Rets	5-Yr % Chng	Rets	5-Yr Rets	5-Yr % Chng	Rets	5-Yr Rets	5-Yr % Chng
Actual:									
1987-88	739			739			739		
Projected:									
1988-89	757			746			740		
1989-90	747			716			702		
1990-91	735			698			677		
1991-92	776			730			701		
1992-93	812	3,827		757	3,647		720	3,540	
1993-94	809			748			705		
1994-95	846			775			723		
1995-96	860			781			722		
1996-97	879			792			725		
1997-98	913	4,307	12.5%	815	3,911	7.2%	740	3,615	2.1%
1998-99	932			823			739		
1999-00	964			847			757		
2000-01	992			865			767		
2001-02	1,028			891			786		
2002-03	1,066	4,982	15.7%	918	4,344	11.1%	805	3,854	6.6%
% Change from 1987-88	44.2%			24.2%			8.9%		

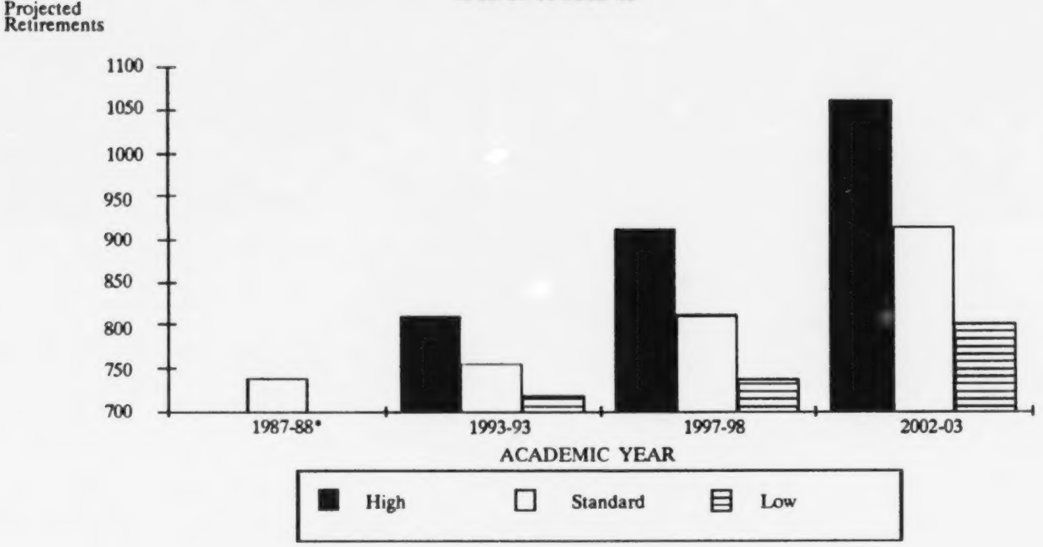
[1] The assumptions about the transition of faculty with respect to other forms of exit (e.g., death, career change) are:

(A) HIGH survival rate - 100% of age 50-64 faculty and 100% of age 65 + exit via retirement.

(B) STANDARD survival rate - 99% of age 50-64 faculty and 100% of age 65 + exit via retirement.

(C) LOW survival rate - 98% of age 50-64 faculty and 100% of age 65 + exit via retirement.

Figure 3
Projected Faculty Retirements for Sample of Institutions
Under Three Survival Rate Assumptions
1988-89 to 2002-03



* Actual Retirements

Scenario A, based on the high survival-to-retirement assumption, predicts that the number of retirements will increase to 1,066 by 2002-03 – an increase of 44.2 percent over the number of retirements in 1987-88. Scenario B, based on standard assumptions, projects a 15-year increase of 24.2 percent. Scenario C, the low survival rate, forecasts an 8.9 percent increase. In this low survival scenario – which assumes that 2 to 3 percent of older faculty leave the profession for reasons other than retirement – anticipated annual retirements do not exceed 1987-88's retirements until 1999-2000.

The projections in Table 34 are aggregated into five-year periods and the percentage change from one five-year period to the next is shown. In all scenarios, the largest number of retirements are projected toward the end of the 15-year period, from 1998-99 through 2002-03.

The changes forecasted under each of the three scenarios are remarkably different in magnitude. Projections are extremely sensitive to relatively small changes in the initial assumptions about non-retirement quit rates.

Projected Retirements for Selected Disciplines

Table 35 summarizes faculty retirement projections based on the standard survival rate assumptions for selected discipline clusters. (Detailed faculty retirement projections for these disciplines are presented in Appendix G.)

The six disciplines displayed vary considerably over the years covered by these forecasts. The rate of retirement will increase most rapidly in computer and information sciences, although the relative magnitude of these numbers is small. Business also shows substantial increases in the number of retirements in later years, 1998-99 through 2002-03.

Each of the four clusters of faculty in core disciplines show a unique pattern. Data for the languages and letters suggest that this discipline cluster is already experiencing its peak retirement period. The highest retirements for these faculty occur during the current five-year period, 1988-89 through 1992-93, with fewer faculty retirements projected for the succeeding ten years. The social sciences and psychology show a gentle high-low-high pattern. The retirement rate for these faculty declines slightly over the second five-year period, but retirements return to current levels by the late 1990s. In the mathematical and physical sciences, modest but fairly steady increases in the number of retirements are expected over the next 15 years. The life sciences show a modest increase in the early 1990s followed by a drop back to current levels.[8]

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[8] The projections reported in Table 35 may be distorted somewhat by the use of a separate national data set to estimate age distributions for faculty age 54 and younger. See Appendix H, Table H-1.

Table 35

Projected Faculty Retirements for Selected Discipline Clusters Under Standard Survival Rate Assumptions, 1988-89 to 2002-03 [1]

	Languages and Letters		Business		Computer and Info Sciences		Life Sciences		Math and Physical Sciences		Social Sciences and Psychology	
Year	Rets	5-Yr Rets	Rets	5-Yr Rets	Rets	5-Yr Rets	Rets	5-Yr Rets	Rets	5-Yr Rets	Rets	5-Yr Rets
Actual:												
1987-88	115		45		6		51		83		94	
Projected:												
1988-89	129		46		2		41		79		119	
1989-90	129		41		4		48		73		112	
1990-91	121		39		4		44		85		108	
1991-92	124		35		5		44		79		113	
1992-93	122	625	42	203	5	20	47	224	82	398	113	565
1993-94	119		40		6		49		87		103	
1994-95	123		36		6		47		85		112	
1995-96	117		43		7		48		85		113	
1996-97	113		45		7		45		84		112	
1997-98	116	588	46	210	9	35	46	235	83	424	111	551
1998-99	112		46		9		46		87		113	
1999-00	112		51		9		45		88		115	
2000-01	109		51		11		43		86		112	
2001-02	110		56		10		44		84		112	
2002-03	112	555	56	260	12	51	42	220	90	435	114	566
% Change from '87-88	-2.6%		24.4%		100.0%		-17.6%		8.4%		-0.9%	

[1] The assumptions about the transition of faculty with respect to other forms of exit (e.g., death, career change) are that 99% of faculty ages 50-64 and 98% of faculty ages 65 and older exit by retirement.

V. DISCUSSION

The following discussion focuses on four issues pertaining to faculty retirement:

- The impact of the 1994 uncapping of mandatory retirement;
- Differences in retirement patterns among institution types;
- Factors influencing individual retirement decisions;
- Projections of faculty retirements.

Impact of Uncapping Mandatory Retirement

Since the earliest proposals were made to change mandatory retirement policies for colleges and universities, there has been considerable speculation regarding the potential impact on faculty retirement. Stauffer (1985) noted that the member institutions of the American Council on Education virtually forced the council to oppose the 1978 federal Age Discrimination in Employment Act amendments which raised the permissible age of mandatory retirement from age 65 to age 70. The American Association of University Professors also opposed the change in federal policy, under the premise that policy permitting faculty to continue beyond current normal retirement age would result in a "lost generation of scholars" who would be unable to find academic employment. Federal legislation eventually granted higher education an extension to 1982 for implementation of the ADEA amendments. This in turn encouraged the creation of incentive early retirement programs at many colleges and universities anxious to make room for "new blood." Chronister and Kepple's review (1987) of several studies revealed that one-fifth to one-half of institutions provided formal early retirement programs for faculty. As recently as 1988, many presidents and academic vice presidents still considered the prospect of faculty members continuing their employment indefinitely as the primary faculty issue confronting their institutions (Kastenbaum and Schulte, 1988).

HIGHLIGHTS

- *Elimination of mandatory retirements on January 1, 1994 will not have disastrous results for higher education on a large scale.*
- *Conclusive statements can not be made about the direct effects of type of retirement plan upon retirement age.*
- *The two most salient factors upon the decision to retire are the faculty member's overall financial status and eligibility for full retirement benefits.*

These concerns were not lessened by the 1986 ADEA amendments which eliminate mandatory retirement as of January 1, 1994. Prior to 1994, Congress will decide whether the current extension will be continued. Determination on this issue will rest in large part upon the findings of a national report mandated by Congress that is being conducted by the National Research Council (Commission on Behavioral and Social Sciences Education, n.d.). At present, it appears likely that mandatory retirement for colleges and universities will be uncapped in 1994.

The available evidence is mixed, but on balance it suggests that changes in mandatory retirement policy may result in gradual shifts in retirement patterns. For example, a 1987 COFHE study indicated that during the three to four years following the 1982 change in policy, there was a shift among member institutions (all independent) from an average retirement age of 64.7 to 66.3. Similarly, Holden and Hansen (1989) observed post-1982 delays in retirements. Based on an analysis of three earlier COFHE studies, Montgomery (1989) predicted that the uncapping of mandatory retirement would postpone retirements, on average, about two years.

In contrast, our earlier study (Lozier and Dooris, 1988) found considerable stability in the average age of retirements pre- and post-1982. Several TIAA-CREF studies (Gray, n.d.; Milletti, 1984) also have noted that the average policy holder continues to retire well before the age of 70.[9]

Several aspects of this study contribute to our understanding of the likely impact of the uncapping of mandatory retirement. As in a number of earlier studies, data are analyzed on the basis of institutional policy pre- and post-1982. The results indicate that institutions that prior to 1982 had established a mandatory retirement age of 70, or had eliminated mandatory retirement altogether, had a constant average age of retirement from 1981-82 through 1987-88. Institutions that underwent a policy change from a 65 to a 70 mandatory retirement age also maintained a relatively constant average retirement age, although it increased by about one year in the last year of the seven years examined. This suggests that the impact of the policy change may not be immediate; perhaps it will increase with the passage of time.

The separator survey results indicate that for 80 percent of the respondents mandatory retirement policies were not a significant factor in their decisions to retire. Even though most of these individuals were facing the prospect of mandatory retirement at some point, other factors were far more important. However, one cannot dismiss the 20 percent of respondents who indicate that a mandatory retirement policy was a very important factor in their decision about when to retire.

Recall that 80 percent of those to whom a mandatory retirement policy was of consequence were 70 years old. When are individuals such as these likely to retire in the absence of mandatory retirement? Two of the respondents indicated they hoped to work until death. Approximately 90 percent indicated that they would have retired by the age of 75. For most faculty members the issue apparently is not whether to retire, but whether mandated policy or other factors are to be the primary elements in the decision.

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[9] Although TIAA-CREF policyholders include more than college and university faculty, there is no indication that the higher education cohort is behaving differently than other TIAA-CREF policyholders.

These results support the conclusion that the elimination of mandatory retirement on January 1, 1994 will not have disastrous results for higher education. However, that is not to say that uncapping will have no impact. If 20 percent of the faculty population in higher education intends to work beyond age 70, significant numbers will be involved.

But this finding need not be alarming. Although anecdotes on many campuses paint pictures of every aging faculty member as an incompetent, unproductive scholar and teacher, most professors remain professionally vital until and even after retirement. For example, the separator survey results show that approximately 20 percent of the formally retired faculty continue to work at least part-time. Many faculty, particularly at doctoral institutions, maintain some level of involvement in research and consulting and the evidence does not support the notion that old faculty are inactive, uninspiring scholars (Kinney and Smith, 1989).

This does not mean that changing demographics should be ignored. Rather, it provides further evidence of the need for institutions to develop comprehensive academic human resource policies and procedures (see Lozier and Dooris, 1989). Institutions need to reassess the quality of their promotion and tenure programs, to consider the full career needs of each faculty member over a longer time frame, and to encourage adjustments in interests, aspirations, and assignments.

Differences in Retirement Patterns

This section considers the possible influence of mandatory retirement policies, the effects of differences in retirement plans upon retirement patterns, and the desirability of including additional considerations in analyses of retirement behaviors.

A study by the Consortium on Financing Higher Education (COFHE, 1987) reported much greater variability in the average age of retirement among independent institutions than for public colleges and universities. The COFHE study also found that the average age of retirement in the independent sector is typically one to two years greater than in public institutions. This pattern was confirmed by the present study, in which the average retirement age at independent institutions is 1.8 years higher than for public colleges and universities.

How significant is the likely impact of institutional policies on mandatory retirement age? Holden and Hansen (1989), reporting on a study they conducted in 1981, noted that the anticipated retirement age for faculty members in independent institutions lagged that in publics by about two years. Even though mandatory retirement policy is more likely to affect the retirement decision in independent institutions, Holden and Hansen suggest that factors other than mandatory retirement age policies "were influencing differences in retirement ages between the public and private sectors" (p. 38). As discussed earlier, that conclusion is essentially consistent with the results of the present study.

How likely is it that the public-independent retirement age difference is related to the defined benefit/ defined contribution distinction? On this question, the evidence — both in the literature and in the present study — is mixed.

As seen earlier (Table 12), independent institutions provide defined contribution retirement programs almost exclusively. In defined contribution programs such as those provided by the TIAA-CREF, retirement benefits are based upon the schedule of payments made into the retirement fund, either by the individual or the employer. Burkhauser and Quinn (1989) have noted that "defined-contribution plans . . . are likely to be actuarially neutral with regard to payout" (p. 70). Accordingly, institutions with defined contribution plans may be more readily affected by changes in mandatory retirement policies.

Holden and Hansen (1989), noting the difference in retirement trends between public and independent institutions, have developed cost analyses to assess whether type of retirement program may be one of the multiple factors influencing differences among institution types. In their model, they observed that "despite very different plan structures, annual benefits from defined benefit and defined contribution plans increase comparably, on the average, as retirement is postponed" (p. 79). They concluded that the decision to defer retirement is not likely to be caused by enrollment in one type of plan.

A recent TIAA-CREF *Research Dialogues* (1990) explored the issue further, using a measure called the "salary replacement ratio," which is simply the ratio of retirement income to pre-retirement salary. Examining two different scenarios, one in which the individual enters the retirement plan at age 30 and another in which the individual enters the retirement plan at age 45, the analysis looks at the salary replacement ratio for retirement at ages 65 through 70, for both defined contribution and defined benefit plans. The TIAA-CREF analysis reveals "that a delay of retirement beyond normal-age 65 can be expected to provide somewhat higher initial benefits in subsequent starting years under both the defined-contribution and defined-benefit plans" (p. 5). However, according to the TIAA-CREF analysis, the average replacement ratio under the defined benefit plan is approximately 9 percent lower than under the defined contribution program.

This study does not attempt to model actual retirement benefits derived from defined benefit and defined contribution programs. The data are insufficient for such a comparison, and for a complete economic analysis of the additional considerations that may or may not have an interactive effect with the retirement decision. However, the institutional survey segment of this study was geared, in part, to the question of whether the type of retirement program had any relationship to the average age of retirement.

The data on retirement ages for all retirees by plan type show individuals in defined benefit plans retiring, on average, about one and one-half years sooner than their colleagues in defined contribution plans (Table 16). On the other hand, a smaller but more uniform data set suggests that, other things being equal, individuals in defined benefit plans may retire at a slightly higher age than their peers in defined contribution plans. As noted earlier, 23 institutions (22 public and 1 independent) offer both defined benefit and defined contribution programs. At those institutions, the average age of retirement is actually slightly lower (61.8, N = 208) for individuals in defined contribution plans, compared to those in defined benefit plans (62.7, N = 704). Since potential intervening influences of institutional differences are presumably minimized for this subset of colleges and universities, this finding – in combination with other indicators – emphasizes that blanket statements about the direct effects of type of retirement plan upon retirement age do not appear to be warranted.

In short, it is likely that many factors contribute to differences in average retirement ages for various retiree cohorts. A recent study by Rees and Smith (1990) reports that retirement occurred at a later average age in private research universities than in other types of private institutions, and Gustman and Steinmeier (1990) have reported on the impact of early incentive retirement programs on age of retirement. Burkhauser and Quinn (1989) also have observed that educators tend to work until a later age than people in other employment sectors.

Accordingly, retirement simulations ideally should incorporate data on a number of variables. Those variables include institutional control and level, retirement program type, availability of formal and informal early retirement incentive programs, other retiree compensation, and, to the extent feasible, campus climate and other less tangible incentives to continue to work or to retire.

Factors Influencing Retirement Decisions

Anticipating the decisions faculty members are likely to make about retirement must begin with an understanding of the factors that influence those decisions. Posing policy questions that institutions will need to address with the uncapping of mandatory retirement, Weiler (1989) speculated that changes in a variety of conditions are likely to have a significant impact on individuals' retirement decision making. In their studies of the general work force, Anderson, Burkhauser, and Quinn (1986) determined that the retirement decision is influenced by both the current value of relevant variables such as income, inflation, and health, and by expectations about their future value.

The most potent factors for faculty, as for workers in general, are financial. In their study, Anderson, Burkhauser, and Quinn (1986) found that retirement decisions within the general work force are most likely to be altered by changes or anticipated changes in such factors as Social Security benefits, recession or inflation, unemployment rates, and rates of economic growth. This finding reinforces the results of an earlier Quinn and Burkhauser report (1983) in which they found that financial considerations such as Social Security benefits were critical factors influencing retirement decisions. Similarly, LaRock (1987) noted that, in addition to such determinants as health, workplace interaction, and intensity of family ties, perceived adequacy of retirement income and the financial status and retirement plans of one's spouse were the critical elements influencing the retirement decision.

In the higher education sector, among the major findings of three studies conducted for the Consortium on Financing Higher Education (COFHE) in 1979-80 (Montgomery, 1989) was the observation that the most powerful predictor of delayed retirement was "fear of inadequate income during the first two years of retirement" (p. 57). The most frequently cited reason for postponing retirement, as reported in one of the COFHE studies, was the need for continued full-time salary.

Among the 18 factors analyzed in this study, financial considerations are the most consequential in the retirement decision. The two most salient factors are overall financial status and eligibility for full retirement benefits. In addition, the availability of early retirement incentive benefits was the most important factor in the retirement decision for over 20 percent of faculty retirees. When such programs are available, they become a powerful variable in combination with other financial considerations.

This finding builds upon the earlier discussions about the likely impact of the uncapping of mandatory retirement and about the influence of retirement programs (defined contribution and defined benefit) on retirement patterns. LaRock (1987) observed that the ADEA legislation was the least important factor influencing the retirement decision. Similarly, Quinn and Burkhauser (1983) noted that the general work force has been retiring earlier in spite of the liberalization of mandatory retirement policies. As we have seen, this trend must be related to the financial situation anticipated by the retirees. To the extent that financial status depends on the type of retirement program, one would expect retirement patterns to depend upon whether individuals participate in defined benefit versus defined contribution programs. Analysis of the three COFHE studies cited above (Montgomery 1989) demonstrated that TIAA-CREF benefits increased as retirement was delayed; these increases "provide a powerful financial incentive for some faculty members who continue working" (p. 59).

For institutions hoping to influence their own retirement rates, financial inducements are probably the most powerful tool. In fact, a financial response in the form of incentive early retirement programs was the initial reaction of many institutions in the late 1970s and 1980s. Whether incentive early retirement programs are the correct response in light of more recent information regarding faculty age distributions and anticipated retirement rates has been the subject of debate. It is questionable whether incentive programs that become permanent or are available to all prospective retirees produce the desired effects. There is speculation that the more useful programs have been those that are limited in both duration and scope. Institutions may wish to analyze correlations between retirement income and retirement age to determine the likely effect of incentive programs or other measures.

Beyond financial considerations, virtually all factors that bear upon the retirement decision are relevant to some faculty but not to others. Retirement is a very personal decision. Variables such as the faculty member's health or the health of a spouse, other professional consulting and employment opportunities, and the need for more personal time cannot be controlled by the institution. Similarly, budget cutbacks at the state or federal level are outside the realm of institutional policy.

But other factors, including several that differ significantly in importance among faculty on the basis of discipline and/or gender, can be influenced by the institution. For example, working conditions and policies make a difference in the retirement decisions of library sciences faculty and of women. Women also noted that administrative pressure and interaction with co-workers affect the desirability of continued employment.

Perhaps as expected, these results clearly show that money matters to nearly everyone. The effect of less tangible elements of professional satisfaction is not as uniform or consistent, but nonetheless it matters also. Career and retirement decisions are ultimately individual decisions, and the significance of personal interactions, the work environment, leadership, and so on cannot be discounted. Money is not the cause of nor the solution to all problems. The extent to which deans and department heads can recognize and act upon the full range of financial and non-financial variables is of critical importance in influencing personal career and retirement behaviors.

Projections of Faculty Retirements

Retirements are only one element in the dynamic process of faculty turnover and replacement. In their comprehensive analysis of the likely market for arts and science faculty, Bowen and Sosa (1989) conclude that faculty retirements over the next 20 years will be a relatively unimportant determinant in where faculty supply meets demand. This conclusion is based in large part on the current age distribution of faculty, in which the number of older faculty is disproportionately large and the number of younger faculty disproportionately small. Given such a distribution, Bowen and Sosa project that total exits through all forms of attrition will be relatively steady.

Bowen and Sosa may or may not be correct that the total exit rate will be constant and that other variables, such as changing student-faculty ratios, may be of great importance in how colleges and universities address changing faculty demographics in the years to come. However, we believe that higher education does not yet have a solid understanding of the career behaviors of older faculty. For example, Bowen and Sosa note that voluntary terminations dominate exits from the system for younger faculty, whereas death and retirement are the dominant reasons for faculty departures in the older age cohorts – but they also note that our knowledge in this area is quite limited. In short, the jury is still out on the question of how potent a variable retirements will be over the next 10 to 20 years. For that reason, colleges and universities should not be quick to dismiss the possible effects of changing retirement patterns upon institutional management.

Largely because researchers still have so much to learn about these issues, caution is necessary in interpreting forecasts of this type, and in moving from data to conclusions to policy. This report is based upon large, diverse data sets designed and collected for the purposes of this analysis. With the support of TIAA-CREF and Pennsylvania State University, some of the constraints of the 1988 study (Lozier and Dooris) were overcome – for example, by expanding the scope of examination to include a broad mix of colleges and universities. The projections generated here are basically consistent with previous forecasts, but it is not surprising that the results differ somewhat from earlier studies.

A number of analysts have forecast that the rate of faculty retirements will escalate beginning sometime during the early- to mid-1990s (Porter and Czujko 1986; Connellan, 1987; Buchen, 1987; and the Commission on the Future Development of the Universities of Ontario 1984). The previous study (Lozier and Dooris 1988) concluded that the number of faculty retirements through the latter half of the 1990s would increase by approximately 50 percent over the retirement rates of the late 1980s and early 1990s.

The forecasts offered here are more conservative, and depend to a great extent upon initial assumptions about quit rates for older faculty. We note in the presentation of results that three survival rates – high, standard, and low – are used to project faculty retirements for the 15-year period ending in 2003. The high survival rate scenario assumes that all faculty over the age of 50 who separate from their institutions in a given year do so through retirement. The standard and low survival rates assume that some percentage of faculty age 50 and over will leave their institutions through death or voluntary termination. Using the 739 actual retirements in 1987-88 as a base, all three scenarios forecast a greater number of retirements in 2002-2003: 1,066 (44% increase), 918 (24% increase), and 805 (9% increase) respectively. In addition, all three scenarios predict that the largest number of retirements will occur toward the end of the 15 years that this model spans. It appears safe to conclude that the rate of faculty retirements will increase through the 1990s and beyond the year 2000. But even the most liberal survival rate assumptions (44%) yield projections which are more conservative than earlier forecasts.

Bowen and Sosa (1989, p. 23) correctly suggest that a limitation of earlier studies has been an inability to distinguish between faculty who retire fully and those who retire from one institution to accept an appointment in another. This study indicates that the proportion of faculty who retire only to become re-employed full-time in another academic appointment is extremely small, at approximately 4 percent. Accordingly, the faculty turnover rates for older faculty suggested by the high and the standard survival rate models probably provide a reasonable range of the increase in the number of faculty retirements from the system that may be seen over the next 15 years.

We also anticipate considerable variability among retirement rates by discipline. Much of the discussion regarding faculty projections and replacement demand have focused upon the arts and sciences disciplines (e.g., Lozier and Dooris 1988; Bowen and Sosa, 1989). Much has been written and said about the large numbers of core discipline faculty hired during the rapid growth of the 1950s and 1960s. It has been anticipated that these faculty members will be the major contributors to the growing number of retirements. However, there is considerable variability not only between arts and science faculty and other faculty, but even within the core disciplines. For example, the peak retirement projection for faculty in *languages and letters* is the current five-year period, 1988-89 through 1992-93, after which the number of annual faculty retirements is projected to decline. Projected annual retirements for the social sciences and psychology are quite stable, while for the *life sciences* the projections increase through the mid-'90s ever so slightly and return to current levels during the third five-year period. Lastly, the number of retirements of faculty members in the *mathematical and physical sciences* are projected to increase very modestly but fairly steadily through to 2002-03.

A total of 3,450 faculty retirements are projected for the humanities and social sciences, under the standard survival rate scenarios, for the 101 participating colleges and universities. The corresponding figure for the sciences is 1,936 faculty. In terms of sheer magnitude the replacement implications are stronger in the humanities and social sciences than in the sciences. However, each represents 33 percent of the faculty in these disciplines. McGuire and Price (1989) had similar findings. They concluded that the overall replacement need (new hires as a percent of all faculty) in liberal arts colleges would be greater in the humanities and social sciences than in the science disciplines. They also reported that the steepest relative replacement need would be in the sciences.

It appears likely that the changing retirement picture will create important problems and opportunities at the institutional level in the years ahead. Replacing older, typically senior faculty members is not the same as recruiting for new faculty lines or replacing faculty moving within the higher education network. Slightly different questions are raised. Should the retiree be replaced in the same discipline or the line shifted to another department? At what salary should the replacement be made? At what academic rank? Can a senior retirement be converted into two assistant professor faculty lines? How can particular disciplines deal with salary compression problems? How will a department head prepare for and cope with older faculty members who can no longer be "aged out" of a position? These and other questions will have to be answered more frequently as the number of retirements increases through the turn of the century.

VI. CONCLUSION

The tenor of the discussion about faculty demographics has changed noticeably over the past 12 years. From about 1978 to 1985, the focal points seemed to be the difficulties likely to accompany changes in mandatory retirement, the specter of increasing numbers of "deadwood" faculty, and the need for incentive early retirement programs. Around 1986, the conversation shifted. At that time, greater emphasis began to be placed upon the replacement of an aging professoriate, the plateau in the production of new Ph.D.'s, and the brain drain of doctorates to business and government.

The latter half of the 1980s also brought a change in the sophistication and intensity of that discussion. The work of Bowen and Schuster (1986), Breneman and Youn (1988), and Bowen and Sosa (1989) exemplified efforts to utilize diverse data sets and apply a variety of social science tools to explore various facets of academic careers and markets.

The availability of information continues to expand. For example, the National Center for Education Statistics (1990a, 1990b, and 1990c) has released a series of reports on postsecondary faculty and faculty issues. The Project on Faculty Retirement, being carried out at Princeton University under the auspices of the American Association of University Professors, the Association of American Universities, the Consortium on Financing Higher Education, and the National Association of State Universities and Land-Grant Colleges, is exploring the likely repercussions of the uncapping of mandatory retirement for leading research universities and selective liberal arts colleges. The Western Interstate Commission for Higher Education recently concluded a major effort to synthesize the growing literature on factors affecting faculty supply and demand. The point is that faculty demography has become a lively area of research activity and administrative interest.

The present study was conceived within that context, as one of many ongoing investigations into the shape of today's and tomorrow's faculty. As noted earlier, this is a very focused attempt to anticipate faculty retirement patterns over the next decade and to improve the understanding of factors influencing retirement behavior. One important part of that attempt is a systematic evaluation of the likely consequences of the 1994 uncapping of mandatory retirement.

Two main aspects of our findings stand out:

1. Based on the standard and high survival rate assumptions, the number of faculty retirements in 2002-03 are likely to be between 24 and 44 percent higher than the number of retirements

in 1987-88; this range reflects the dependence of retirements upon other determinants of faculty flow.

2. The impact of the legislated uncapping of mandatory retirement in 1994 upon overall faculty retirement patterns will most likely be gradual.

In addition to these two points, a third theme--specificity and individuality--is apparent throughout our findings. The expected broad increase in the absolute numbers of faculty retirements masks substantial demographic differences among disciplines and types of institutions. Some disciplines are already at their peak of faculty retirements. The retirement rate for the languages and letters, for example, is expected to decline somewhat through the decade. Likewise, retirement patterns differ significantly between public and private colleges and universities, and among baccalaureate, comprehensive, and doctoral institutions. At the individual level, retirement is a very personal decision, and considerations which are very important to some older faculty are irrelevant to others. For that reason, although the 1994 change is not expected to dramatically alter the scale or direction of faculty retirements in the aggregate, it will certainly add a new dimension to individual cases.

As the interest in faculty flow issues, and particularly faculty retirements, increased over the past several years, so has the direction of the discussion. As recently as January 6, 1988, a headline in *The Chronicle of Higher Education* read, "College Officials Are Worrying About Aging Faculty." Only 12 months later *The Chronicle* was proclaiming, "Uncertainty Is Rampant as Colleges Begin to Brace for Faculty Shortage" (January 25, 1989). Bowen and Sosa (1989) have warned of dramatic faculty shortages by the turn of the century in some disciplines. At the 1990 conference of the American Association for Higher Education, Elaine El-Khawas, vice president for policy analysis and research at the American Council on Education, suggested that faculty shortages are sure to occur in the absence of constructive initiatives. She urged institutions at all levels to assist higher education collectively to increase the faculty supply. Yet, as we discussed earlier in this report, Bowen and Sosa suggest that faculty retirements per se will not be a significant contributor to projected faculty shortages. In short, the future effects of retirement patterns upon the overall market for faculty are not direct, simple, nor easy to predict with confidence. The data analyzed in this study do not support statements about whether or not broad faculty shortages over the next 12 to 15 years are likely, nor about the extent of such shortages, should they occur.

This study does indicate that the flow of faculty from academe as a result of retirement will increase significantly in some disciplines over the course of the next 15 years. Sustained or even increasing student enrollment through the end of the decade will require that the instructional capacity of the faculty be maintained. Shortages could be the consequence if academic careers are not deemed attractive; if the length of time to earn a Ph.D. is not reduced; if institutions rely on a bidding war to attract faculty from other institutions to avoid their own shortages; if faculty career development is regarded as someone else's problem; if the opportunity costs of attaining a graduate degree are not reduced; or if significant numbers of women and minorities are not provided with career-enticing incentives and an encouraging professional environment.

This report has addressed a few specific questions about faculty retirements, and provides one piece of the faculty supply and demand puzzle. We hope that it will prove useful as a source of information for secondary analyses by other researchers. Finally, we look forward to learning of and sharing in continued progress in this field.

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APPENDIX A

Institutional Data Exchange Survey Instrument

FACULTY RETIREMENT PROJECT:
INSTITUTIONAL DATA EXCHANGE

Supported by

Teachers Insurance and Annuity Association
College Retirement Equities Fund

This data exchange is being conducted to improve understanding of the academic market place for older faculty and of the possible implications of the national uncapping of mandatory retirement. To provide maximum benefit from the exchange, please attempt to answer all of the survey questions.

Thank you very much for your participation and cooperation. Kindly return the completed form to:

Faculty Retirement Survey
The Pennsylvania State University
Center for the Study of Higher Education
133 Willard Building
University Park, PA 16802

FACULTY RETIREMENT DATA EXCHANGE

do
not
mark

1. Name of institution: ______________________________ 1-

2. Location: ______________________________ 2-

(For multi-campus institutions, this survey is intended to collect data only for the single location to which the survey was sent.)

3. Effective July 1, 1982, federal law prohibited institutions from mandating retirement at age 65. Prior to July 1, 1982, did your institution mandate retirement of tenured faculty based on age?

a. YES -- IF YES, AT WHAT AGE? ____ 3a-

b. NO b

4. Which of the following best describes the current policy on mandatory retirement at your institution?

a. INSTITUTIONAL POLICY MANDATES RETIREMENT AT AGE ____ 4a-

b. INSTITUTIONAL POLICY PROHIBITS MANDATORY RETIREMENT b

c. STATE LAW PROHIBITS MANDATORY RETIREMENT c

d. OTHER -- PLEASE DESCRIBE ______________________________ d-

____

____

____

5. Did your institution or state change its mandatory retirement policy between 1982-83 and 1987-88?

a. NO 5a

b. YES -- PLEASE DESCRIBE, AND IDENTIFY YEARS OF CHANGE ____________ b-

____

____

____

Page 2

Definition of **faculty**: This survey seeks data on full-time tenured and tenure track faculty in the positions of instructor, assistant professor, associate professor, and professor for academic year 1987-88. This definition includes administrators with faculty rank.

6. Does the above definition apply to your institution?

a. YES 6a

b. NO -- PLEASE PROVIDE THE APPROPRIATE DEFINITION FOR YOUR DATA: b-

____

____

Definition of **separated** faculty: Separated faculty are individuals who formally ceased employment. This includes individuals who retired or resigned but who continue to work on temporary appointments. Exclude persons participating in formal partial or phased retirement programs.

7. Please indicate how many members of the faculty population (as defined at top of page) age 55 and over separated from the institution in 1987-88:

a. RETIREMENTS: ____ 7a-

b. DEATHS: ____ b-

c. OTHER TERMINATIONS: ____ (E.G., RESIGNATIONS OR DISMISSALS) c-

d. TOTAL SEPARATIONS: ____ d-

8. Retirement plans are frequently described as either "defined-benefit" or "defined-contribution" programs. In defined-benefit programs (such as many state plans), retirement benefits are calculated based on factors such as years of service and age. In defined-contribution programs (such as TIAA-CREF), retirement benefits are based upon the schedule of payments into the retirement fund.

Please mark the one response which best describes the faculty retirement plan at your institution:

a. DEFINED-BENEFIT PROGRAM **(GO TO TO ITEM 9)** 8a

b. DEFINED-CONTRIBUTION PROGRAM **(GO TO TO ITEM 9)** b

c. BOTH DEFINED-BENEFIT AND DEFINED-CONTRIBUTION PROGRAMS ARE AVAILABLE **(SKIP TO ITEM 11)** c

9. Please provide, by year, the number of retirements and the average (mean) age at retirement for faculty (to the first decimal place): 9-

	81-82	82-83	83-84	84-85	85-86	86-87	87-88
Number of retirements							
Avg age at retirement							

10. If the data for item 9 are not comparable year-to-year (because of a change in the reporting unit, faculty definition, procedure used, etc.), please indicate which years are comparable: 10-

____

____

(PLEASE SKIP TO ITEM 13)

11. Please provide, by year and by type of plan to which faculty retirees subscribed, the number of retirements and the average (mean) age at retirement for faculty (to the first decimal place): 11-

	81-82	82-83	83-84	84-85	85-86	86-87	87-88
Defined-benefit: Number of retirements							
Avg age at retirement							
Defined-contribution: Number of retirements							
Avg age at retirement							
*Total faculty: Number of retirements							
Avg age at retirement							

*Note on item 11--if you cannot separate retirements by type of retirement plan, please provide data for faculty in total.

12. If the data for item 11 are not comparable year-to-year (because of a change in the reporting unit, faculty definition, procedure used, etc.), please indicate which years are comparable: 12-

____

____

Page 4

13. Please report for Fall 1987 the number of faculty (headcount), for faculty as defined on page 2.

a. TOTAL NUMBER OF FACULTY, ALL AGES COMBINED: ______ 13a-

b. NUMBER OF FACULTY AGE 55 AND OVER: ______ b-

Directions for items 14 and 15 (pages 5 and 6)

Definition of faculty.
As defined on page 2.

Information requested.
Item 14: Number of faculty retirements, by discipline cluster and age of the retiring faculty member, for 1987-88. Do not count faculty who elected phased or partial retirement and have not yet become fully retired. If you cannot provide the data by discipline cluster, please supply the total number of retirements by age of the retiring faculty members.

Item 15: Number of active faculty members by discipline cluster and age, for Fall 1987.

Data format.
The data may be provided in whatever form is most convenient for you, including hand tabulations or quick and unpolished computer printouts. The data need not be transferred to the survey instrument.

Importance.
Providing the data for items 14 and 15 may pose difficulties for some participants, but this information will be the foundation of the data exchange. Your institution's cooperation in completing these items is appreciated.

14. Number of **FACULTY RETIREMENTS**, by age of the retiring faculty member and by discipline cluster, for **1987-88**: (see page 2 for definition of faculty)

Academic Cluster	CIP Code*	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71+
Agriculture	01,02,03																		
Architecture & Environmental Design	04																		
Languages, Area Studies, Humanities, & Letters	05,16,23 24,38,39																		
Business	06,07,08																		
Computer & Information Sciences	11																		
Education	13,21																		
Engineering & Engineering Technology	14,15																		
Allied Health & Health Sciences	17,18,34																		
Home Economics	19,20																		
Law	22																		
Library Science	25																		
Life Sciences	26																		
Mathematics & Physical Sciences	27,40																		
Recreation	31,36																		
Science Technologies	41																		
Social Sciences & Psychology	42,43 44,45																		
Visual & Performing Arts	50																		
Other	all other																		
TOTALS																			

*CIP: federal Classification of Instructional Programs number

BEST COPY AVAILABLE

15. Number of **FACULTY MEMBERS**, by age and discipline cluster, for **FALL 1987** (see page 2 for definition of faculty)

Page 6

Academic Cluster	CIP Code*	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71+
Agriculture	01,02,03																		
Architecture & Environmental Design	04																		
Languages, Area Studies, Humanities, & Letters	05,16,23 24,38,39																		
Business	06,07,08																		
Computer & Information Sciences	11																		
Education	13,21																		
Engineering & Engineering Technology	14,15																		
Allied Health & Health Sciences	17,18,34																		
Home Economics	19,20																		
Law	22																		
Library Science	25																		
Life Sciences	26																		
Mathematics & Physical Sciences	27,40																		
Recreation	31,36																		
Science Technologies	41																		
Social Sciences & Psychology	42,43 44,45																		
Visual & Performing Arts	50																		
Other	all other																		
TOTALS																			

* CIP: federal Classification of Instructional Programs number

16. Name of respondent: ______________________ 16-

17. Title: ______________________ 17-

18. Telephone: ______________________ 18-

THANK YOU.

The success of this cooperative data exchange depends upon the efforts of many individual respondents. We thank you for your help.

APPENDIX B

Individual Separator Survey Instrument

FACULTY RETIREMENT PROJECT:
FACULTY SEPARATION SURVEY

Because of the expected retirement of many faculty hired during the 1960s, higher education may be facing an academic-staffing problem in the coming years. A group of concerned colleges and universities are undertaking a cooperative effort to ascertain the nature and magnitude of this problem. Penn State University is coordinating this effort.

This project has two components. The first, sponsored by the Teachers Insurance and Annuity Association-College Retirement Equities Fund, is an institutional data exchange. The data exchange is collecting information directly from colleges and universities on faculty retirements by age, discipline, and type of retirement program, and on the age distribution of current faculty by discipline. The second component is a survey of faculty age 55 or over who separated from their college or university during the 1987-88 academic year.

You have been identified as having separated from one of the participating colleges or universities. You have received this survey because the chief academic officer at your previous institution has endorsed the project. We have numerically coded the questionnaires to expedite data collection and tabulation; your response will be completely confidential.

The information you provide can give useful insights on the career and retirement decisions of faculty.

This questionnaire is stamped and addressed for return mailing. No envelope is necessary.

Thank you for participating.

do not mark

1. Name of the institution from which
   you separated during 1987-88: ________________________ 1-

2. For the purposes of this survey, you "retired" if you formally retired from a faculty position (or an administrative position combined with faculty rank) in the college or university named in item 1, and you are no longer making contributions to that institution's retirement program.

   Based on this definition, did you retire from a college or university in 1987-88?

   a. YES -- GO TO ITEM 3 2a

   b. NO -- GO TO ITEM 4 b

3. Please circle the statement which best describes your current situation:

   a. FULLY RETIRED; NO LONGER EMPLOYED (GO TO ITEM 5) 3a

   b. RETIRED BUT STILL EMPLOYED BY A COLLEGE OR UNIVERSITY ON A PART-TIME BASIS (GO TO ITEM 5) b

   c. RETIRED BUT STILL EMPLOYED BY A COLLEGE OR UNIVERSITY ON A FULL-TIME BASIS (GO TO ITEM 5) c

   d. RETIRED FROM A COLLEGE OR UNIVERSITY, NOW WORKING FOR AN EMPLOYER OTHER THAN A COLLEGE OR UNIVERSITY (GO TO ITEM 5) d

4. Please circle the statement which best describes your current employment situation:

   a. NOT RETIRED, PRESENTLY EMPLOYED BY A COLLEGE OR UNIVERSITY (GO TO ITEM 8) 4a

   f. NOT RETIRED, PRESENTLY WORKING FOR AN EMPLOYER OTHER THAN A COLLEGE OR UNIVERSITY, OR SELF-EMPLOYED (GO TO ITEM 8) b

Page 2

5. The literature on retirement decisions indicates that a variety of factors influence an individual's retirement planning. Please indicate how important each of the following was in your decision to retire in 1987-88 from the institution cited in item 1:

	Not Important					Very Important	
ELIGIBILITY FOR FULL RETIREMENT BENEFITS	1	2	3	4	5	6	5a
AVAILABILITY OF EARLY RETIREMENT INCENTIVE BENEFITS	1	2	3	4	5	6	b
OVERALL FINANCIAL STATUS	1	2	3	4	5	6	c
DESIRABILITY OF MORE PERSONAL AND/OR FAMILY TIME	1	2	3	4	5	6	d
OTHER INTERESTS	1	2	3	4	5	6	e
PERSONAL HEALTH	1	2	3	4	5	6	f
HEALTH OF SPOUSE	1	2	3	4	5	6	g
MANDATORY RETIREMENT POLICIES	1	2	3	4	5	6	h
ANNUAL SALARY INCREASES	1	2	3	4	5	6	i
TIMING OF SPOUSE'S RETIREMENT	1	2	3	4	5	6	j
STATE OF THE ECONOMY	1	2	3	4	5	6	k
WORKING CONDITIONS AND POLICIES	1	2	3	4	5	6	l
ADMINISTRATIVE PRESSURE	1	2	3	4	5	6	m
BUDGET CUTBACKS	1	2	3	4	5	6	n
CURRICULAR REVISION	1	2	3	4	5	6	o
INTERACTION WITH CO-WORKERS	1	2	3	4	5	6	p
AVAILABILITY OF EMERITUS BENEFITS	1	2	3	4	5	6	q
OTHER EMPLOYMENT OPPORTUNITIES (INCLUDING SELF-EMPLOYMENT)	1	2	3	4	5	6	r
OTHER -- PLEASE SPECIFY:	1	2	3	4	5	6	s-

Page 3

6. Was mandatory retirement or the prospect of mandatory retirement important in your decision to retire?

   a. NO -- GO TO ITEM 8 6a

   b. YES -- GO TO ITEM 7 b

7. If mandatory retirement or the prospect of mandatory retirement had not been a factor, to what age would you have continued at the institution named in item 1?

   ______ (AGE) 7-

8. What was your age at time of separation? ______ (AGE) 8-

9. Gender: a. MALE 9a

   b. FEMALE b

10. What is (or was) your primary academic discipline? ____________________ 10-

11. What was your position the year you separated from the institution?

    a. FACULTY MEMBER (INCLUDING DEPARTMENT CHAIR) 11a

    b. ADMINISTRATOR b

    c. COMBINED FACULTY/ADMINISTRATIVE POSITION c

    d. OTHER (PLEASE SPECIFY) d

Please fold and mail the survey with our thanks.

Faculty Separation Survey
Center for the Study of Higher Education
133 Willard Building
University Park, PA 16802

APPENDIX C

Participating Institutions

Participating Institutions

Institutions	State	Region
Public-Baccalaureate		
Bluefield State College	WV	S
Christopher Newport College	VA	S
Evergreen State College	WA	W
Glassboro State College	NJ	NE
Glenville State College	WV	S
Lock Haven University	PA	NE
*Longwood College	VA	S
Mesa State College	CO	W
Minot State College	ND	MW
Missouri Southern State College	MO	MW
Missouri Western State College	MO	MW
Plymouth State College	NH	NE
St. Mary's College of Maryland	MD	NE
SUNY Maritime College	NY	NE
University of Minnesota-Morris	MN	MW
University of Pittsburgh-Johnstown	PA	NE
University of South Carolina, Spartanburg	SC	S
University of Southern Indiana	IN	MW
University of the Virgin Islands	VI	S
Virginia Military Institute	VA	S
West Liberty State College	WV	S
Public-Comprehensive		
Augusta College	GA	S
East Central University	OK	S
Livingston University	AL	S
Rhode Island College	RI	NE
Shippensburg University	PA	NE
Southern Illinois Univ.-Edwardsville	IL	MW
*Texas A & I University	TX	S
Western Washington University	WA	W
Public-Doctoral		
Auburn University	AL	S
Indiana University-Bloomington	IN	MW
North Carolina State University	NC	S
The Pennsylvania State Univ.-Univ. Park	PA	NE
Rutgers-New Brunswick	NJ	NE
SUNY-Binghamton	NY	NE
University of California-San Diego	CA	W
University of Kansas-Lawrence	KS	MW
University of Kentucky	KY	S
University of Missouri-Columbia	MO	MW
University of Oregon-Eugene	OR	W
University of Pittsburgh-Main Campus	PA	NE
University of Texas at Austin	TX	S
University of Utah	UT	W
West Virginia University	WV	S

Institutions	State	Region
Independent-Baccalaureate		
Allegheny College	PA	NE
Allentown Coll. of Saint Francis De Sales	PA	NE
Bartlesville Wesleyan	OK	S
*Blackburn College	IL	MW
Bradford College	MA	NE
*College Misericordia	PA	NE
College of the Atlantic	ME	NE
Caldwell College	NJ	NE
Campbellsville College	KY	S
Connecticut College	CT	NE
Davidson College	NC	S
Gettysburg College	PA	NE
Graceland College	IA	MW
Huntington College	IN	MW
Lafayette College	PA	NE
Lenoir-Rhyne College	NC	S
Milliken University	IL	MW
Molloy College	NY	NE
Muskingum College	OH	MW
Quincy College	IL	MW
*Saint Martin's College	WA	W
Scripps College	CA	W
Susquehanna University	PA	NE
Texas Lutheran College	TX	S
Urbana University	OH	MW
Wartburg College	IA	MW
Wilson College	PA	NE
Wingate College	NC	S
Independent-Comprehensive		
Canisius College	NY	NE
Duquesne University	PA	NE
Fairfield University	CT	NE
Furman University	SC	S
Gannon University	PA	NE
Hofstra University	NY	NE
John Carroll University	OH	MW
Manhattan College	NY	NE
Our Lady of the Lake U of San Antonio	TX	S
*Pacific Lutheran University	WA	W
Rollins College	FL	S
Seattle Pacific University	WA	W
Simmons College	MA	NE
Suffolk University	MA	NE
University of Dallas	TX	S
University of Hartford	CT	NE
University of LaVerne	CA	W
Union College	NY	NE
Wheaton College	IL	MW

Institution	State	Region
Independent-Doctoral		
Boston University	MA	NE
Drew University	NJ	NE
Fordham University	NY	NE
George Washington University	DC	NE
Georgetown University	DC	NE
Lehigh University	PA	NE
Loyola University of Chicago	IL	MW
Marquette University	WI	MW
Southern Methodist University	TX	S
Syracuse University	NY	NE
Tufts University	MA	NE
University of Notre Dame	IN	MW
University of Rochester	NY	NE
Yale University	CT	NE

*Provided list of separators only.

APPENDIX D

Faculty Distributions by Age and Discipline

Table D-1
Number of Faculty Members by Age and Discipline Cluster, 1987-88

ALL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	883	28	47	42	37	42	19	27	17	16	16	13	11	12	2	4	0	1	1217
Architecture & Design	228	6	9	5	5	4	5	7	7	4	3	6	2	2	0	2	0	0	295
Languages & Letters	3690	135	135	127	117	125	111	114	95	87	95	73	53	46	32	32	13	14	5094
Business	2100	40	35	47	31	33	29	37	33	36	16	25	23	7	9	12	8	7	2528
Computer & Info Sciences	422	4	11	5	10	3	6	4	2	2	3	2	0	1	0	1	0	0	476
Education	1818	98	75	86	84	74	66	47	54	21	27	17	14	14	11	13	2	2	2523
Engineering	1839	54	78	67	47	46	44	45	37	46	46	44	23	13	8	4	5	13	2459
Health Sciences	3571	98	102	76	75	52	58	69	57	43	36	28	33	18	14	13	3	16	4362
Home Economics	236	2	5	9	8	6	2	3	3	4	5	0	1	1	1	0	0	0	286
Law	527	13	14	18	13	13	6	7	5	6	3	5	7	5	4	3	2	8	659
Library Science	250	2	9	8	11	6	10	10	11	5	6	2	2	2	0	1	2	0	337
Life Sciences	1405	54	49	60	50	55	54	49	30	35	28	27	17	11	8	12	0	6	1950
Math & Physical Sciences	2942	100	111	85	89	100	85	58	63	55	46	54	35	21	26	12	7	6	3895
Recreation	191	4	6	6	8	4	5	3	2	1	5	2	0	0	0	0	1	0	238
Science Technologies	9	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	13
Social Sciences & Psych	3934	184	114	97	101	114	85	96	101	81	80	53	55	43	28	24	16	13	5219
Visual & Performing Arts	1590	72	72	59	63	53	43	35	42	29	28	24	23	21	8	4	7	14	2187
Other	1170	46	50	52	31	30	36	30	33	32	24	17	15	12	5	9	1	5	1598
Total	26805	941	922	850	780	760	664	641	592	503	467	393	314	230	156	146	67	105	35336

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-2
Number of Faculty Members by Age and Discipline Cluster, 1987–88

PUBLIC INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	871	27	46	42	37	42	19	27	17	16	14	12	10	11	1	4	0	1	1197
Architecture & Design	192	5	7	2	3	3	4	6	7	4	2	5	1	1	0	1	0	0	243
Languages & Letters	1911	74	70	64	62	60	52	57	53	35	50	30	23	16	13	14	5	13	2602
Business	1118	23	22	22	19	21	18	17	19	14	7	12	13	3	3	6	3	3	1343
Computer & Info Sciences	304	4	6	1	7	3	4	3	1	2	3	2	0	0	0	1	0	0	341
Education	1428	84	57	69	65	61	53	40	41	17	24	12	10	8	10	10	0	1	1990
Engineering	1308	38	46	51	38	31	28	31	28	28	31	26	16	7	3	4	3	10	1727
Health Sciences	2473	62	60	59	48	36	37	40	30	24	22	18	24	11	9	9	1	7	2970
Home Economics	210	1	4	6	4	6	1	2	2	2	4	0	1	1	1	0	0	0	245
Law	222	4	5	8	1	2	0	3	1	2	1	2	2	0	2	2	1	5	263
Library Science	198	2	8	8	10	6	7	9	10	5	4	2	0	2	0	0	1	0	272
Life Sciences	1007	42	39	41	36	43	44	41	18	19	18	17	14	6	4	7	0	6	1402
Math & Physical Sciences	1919	71	68	61	53	61	50	41	39	37	29	29	19	10	12	11	3	4	2517
Recreation	124	3	6	5	5	3	3	1	1	1	4	0	0	0	0	0	0	0	156
Science Technologies	4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	6
Social Sciences & Psych	2546	82	84	63	70	80	54	66	67	45	50	36	31	20	17	13	9	11	3344
Visual & Performing Arts	1018	48	51	41	45	31	27	25	28	18	19	15	15	8	4	2	3	12	1410
Other	869	38	38	37	25	23	28	20	21	19	15	7	10	6	4	7	0	5	1172
Total	17722	609	617	580	528	512	429	429	383	288	297	225	189	111	83	91	29	78	23200

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[1] See Table D-13 for disciplines which comprise these clusters.

Table D-3
Number of Faculty Members by Age and Discipline Cluster, 1987-88

INDEPENDENT INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	12	1	1	0	0	0	0	0	0	0	2	1	1	1	1	0	0	0	20
Architecture & Design	36	1	2	3	2	1	1	1	0	0	1	1	1	1	0	1	0	0	52
Languages & Letters	1779	61	65	63	55	65	59	57	42	52	45	43	30	30	19	18	8	1	2492
Business	982	17	13	25	12	12	11	20	14	22	9	13	10	4	6	6	5	4	1185
Computer & Info Sciences	118	0	5	4	3	0	2	1	1	0	0	0	0	1	0	0	0	0	135
Education	390	14	18	17	19	13	13	7	13	4	3	5	4	6	1	3	2	1	533
Engineering	531	16	32	16	9	15	16	14	9	18	15	18	7	6	5	0	2	3	732
Health Sciences	1098	36	42	17	27	16	21	29	27	19	14	10	9	7	5	4	2	9	1392
Home Economics	26	1	1	3	4	0	1	1	1	2	1	0	0	0	0	0	0	0	41
Law	305	9	9	10	12	11	6	4	4	4	2	3	5	5	2	1	1	3	396
Library Science	52	0	1	0	1	0	3	1	1	0	2	0	2	0	0	1	1	0	65
Life Sciences	398	12	10	19	14	12	10	8	12	16	10	10	3	5	4	5	0	0	548
Math & Physical Sciences	1023	29	43	24	36	39	35	17	24	18	17	25	16	11	14	1	4	2	1378
Recreation	67	1	0	1	3	1	2	2	1	0	1	2	0	0	0	0	1	0	82
Science Technologies	5	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	7
Social Sciences & Psych	1388	102	30	34	31	34	31	30	34	36	30	17	24	23	11	11	7	2	1875
Visual & Performing Arts	572	24	21	18	18	22	16	10	14	11	9	9	8	13	4	2	4	2	777
Other	301	8	12	15	6	7	8	10	12	13	9	10	5	6	1	2	1	0	426
Total	9083	332	305	270	252	248	235	212	209	215	170	168	125	119	73	55	38	27	12136

[1] See Table D-13 for disciplines which comprise these clusters.

Table D–4
Number of Faculty Members by Age and Discipline Cluster, 1987–88

BACCALAUREATE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	9	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	10
Architecture & Design	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Languages & Letters	607	11	22	14	20	19	16	11	9	10	11	9	10	9	2	2	1	1	784
Business	281	12	7	10	5	6	5	7	6	7	4	5	1	1	1	1	1	1	361
Computer & Info Sciences	69	0	2	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	74
Education	270	11	12	8	9	10	8	5	9	2	3	1	2	1	0	0	1	0	352
Engineering	102	2	3	5	1	1	3	3	1	3	3	1	1	1	0	0	0	0	130
Health Sciences	149	2	7	1	2	1	2	0	1	3	1	0	1	2	1	0	1	0	174
Home Economics	8	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Law	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Library Science	26	0	1	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	31
Life Sciences	139	5	3	5	4	8	4	7	4	4	1	2	2	1	1	2	0	0	192
Math & Physical Sciences	414	9	16	13	10	14	9	6	11	3	5	12	0	0	2	1	0	1	526
Recreation	69	1	1	0	2	1	3	1	1	1	1	0	0	0	0	0	0	0	81
Science Technologies	5	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	8
Social Sciences & Psych	556	18	13	16	8	14	11	8	10	13	7	5	4	4	2	2	1	1	693
Visual & Performing Arts	269	15	15	7	8	8	6	3	7	5	2	2	5	2	1	0	0	0	355
Other	120	5	4	7	5	7	6	2	2	1	1	0	1	0	0	0	0	0	161
Total	3101	92	106	90	76	89	74	55	61	53	40	38	29	21	10	8	5	4	3952

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-5
Number of Faculty Members by Age and Discipline Cluster, 1987-88

COMPREHENSIVE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	731	33	39	31	28	33	20	35	20	20	21	15	13	9	5	9	3	0	1065
Business	551	10	10	13	9	10	12	14	9	13	4	6	6	2	3	4	3	2	681
Computer & Info Sciences	102	2	4	1	4	0	2	1	1	0	0	0	0	0	0	0	0	0	117
Education	404	27	20	20	24	18	16	7	11	9	6	3	4	2	1	4	0	1	577
Engineering	117	5	9	3	4	1	4	2	0	3	1	3	2	2	0	0	1	0	157
Health Sciences	199	3	9	6	5	5	3	4	4	0	0	1	0	2	1	1	0	0	243
Home Economics	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Law	95	5	3	2	3	4	0	0	0	0	0	0	2	1	1	0	1	3	120
Library Science	48	1	2	0	1	3	3	2	2	0	1	0	0	0	0	0	1	0	64
Life Sciences	179	8	5	8	8	7	8	7	1	5	6	5	3	1	1	1	0	0	253
Math & Physical Sciences	473	13	18	17	16	18	15	9	7	2	10	6	3	6	4	1	0	0	618
Recreation	40	0	1	1	1	0	0	2	0	0	1	1	0	0	0	0	1	0	48
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	620	24	22	22	27	14	18	17	16	15	9	8	8	12	6	5	0	0	843
Visual & Performing Arts	284	17	13	9	16	13	3	8	11	7	3	4	1	4	2	1	1	1	398
Other	206	5	6	8	5	6	5	7	4	5	3	4	3	0	1	3	0	0	271
Total	4057	153	161	142	151	132	109	115	86	79	65	56	45	41	25	29	11	7	5464

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-6
Number of Faculty Members by Age and Discipline Cluster, 1987-88

DOCTORAL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	874	28	47	42	37	42	19	27	17	15	16	13	11	12	2	4	0	1	1207
Architecture & Design	221	6	9	5	5	4	5	7	7	4	3	6	2	2	0	2	0	0	288
Languages & Letters	2352	91	74	82	69	73	75	68	66	57	63	49	30	28	25	21	9	13	3245
Business	1268	18	18	24	17	17	12	16	18	16	8	14	16	4	5	7	4	4	1486
Computer & Info Sciences	251	2	5	4	5	3	4	2	1	2	2	2	0	1	0	1	0	0	285
Education	1144	60	43	58	51	46	42	35	34	10	18	13	8	11	10	9	1	1	1594
Engineering	1620	47	66	59	42	44	37	40	36	40	42	40	20	10	8	4	4	13	2172
Health Sciences	3223	93	86	69	68	46	53	65	52	40	35	27	32	14	12	12	2	16	3945
Home Economics	220	2	5	5	7	6	2	3	3	4	5	0	1	1	1	0	0	0	265
Law	431	8	11	16	10	9	6	7	5	6	3	5	5	4	3	3	1	5	538
Library Science	176	1	6	8	10	3	6	7	9	5	5	2	0	2	0	1	1	0	242
Life Sciences	1087	41	41	47	38	40	42	35	25	26	21	20	12	9	6	9	0	6	1505
Math & Physical Sciences	2055	78	77	55	63	68	61	43	45	50	31	36	32	15	20	10	7	5	2751
Recreation	82	3	4	5	5	3	2	0	1	0	3	1	0	0	0	0	0	0	109
Science Technologies	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5
Social Sciences & Psych	2758	142	79	59	66	86	56	71	75	53	64	40	43	27	20	17	15	12	3683
Visual & Performing Arts	1037	40	44	43	39	32	34	24	24	17	23	18	17	15	5	3	6	13	1434
Other	844	36	40	37	21	17	25	21	27	26	20	13	11	12	4	6	1	5	1166
Total	19647	696	655	618	553	539	481	471	445	371	362	299	240	168	121	109	51	94	25920

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-7
Number of Faculty Members by Age and Discipline Cluster, 1987-88

PUBLIC BACCALAUREATE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	8
Architecture & Design	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Languages & Letters	290	5	11	5	8	12	8	6	5	4	8	3	5	4	0	1	0	1	376
Business	180	10	6	7	4	5	4	3	3	2	3	4	1	1	0	0	0	0	233
Computer & Info Sciences	45	0	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	49
Education	204	8	8	6	8	8	7	2	5	2	3	1	1	0	0	0	0	0	263
Engineering	68	2	3	3	0	1	3	1	0	2	3	1	0	1	0	0	0	0	88
Health Sciences	88	0	2	0	1	1	1	0	0	2	0	0	0	1	0	0	0	0	96
Home Economics	5	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Law	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Library Science	11	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	13
Life Sciences	74	2	2	3	2	7	2	4	1	2	1	1	1	0	1	0	0	0	103
Math & Physical Sciences	233	7	5	11	5	9	6	4	6	3	2	5	0	0	0	1	0	0	297
Recreation	25	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	29
Science Technologies	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Social Sciences & Psych	319	9	9	9	5	8	4	4	4	5	5	2	2	3	1	1	1	0	391
Visual & Performing Arts	124	11	8	5	6	2	4	2	2	2	2	1	1	0	1	0	0	0	171
Other	90	4	1	5	4	6	5	1	1	0	0	0	0	0	0	0	0	0	117
Total	1768	59	57	56	45	59	46	29	27	26	29	18	11	10	3	3	1	1	2248

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-8
Number of Faculty Members by Age and Discipline Cluster, 1987-88

PUBLIC COMPREHENSIVE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	243	9	11	11	12	7	3	13	6	4	6	4	5	0	0	2	1	0	337
Business	155	5	4	3	5	4	6	3	2	2	0	1	2	1	0	1	1	0	195
Computer & Info Sciences	68	2	0	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	74
Education	244	21	13	11	12	12	10	7	5	5	4	1	2	1	0	1	0	0	349
Engineering	18	1	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	22
Health Sciences	119	1	7	5	4	2	2	2	3	0	0	1	0	2	0	0	0	0	148
Home Economics	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Library Science	22	1	2	0	0	3	0	1	1	0	0	0	0	0	0	0	0	0	30
Life Sciences	68	4	4	3	4	4	4	5	1	0	1	1	1	0	0	0	0	0	100
Math & Physical Sciences	191	7	7	8	6	6	5	6	4	0	3	1	1	0	0	1	0	0	246
Recreation	18	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	21
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	263	9	12	12	14	9	10	10	4	5	5	4	2	2	3	1	0	0	365
Visual & Performing Arts	151	11	7	6	7	2	1	6	7	2	2	1	0	1	0	0	1	0	205
Other	104	4	6	2	3	3	3	4	3	1	1	1	2	0	1	1	0	0	139
Total	1667	75	74	64	70	52	45	59	36	19	22	15	16	7	4	7	3	0	2235

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-9
Number of Faculty Members by Age and Discipline Cluster, 1987-88

PUBLIC DOCTORAL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	864	27	46	42	37	42	19	27	17	15	14	12	10	11	1	4	0	1	1189
Architecture & Design	188	5	7	2	3	3	4	6	7	4	2	5	1	1	0	1	0	0	239
Languages & Letters	1378	60	48	48	42	41	41	38	42	27	36	23	13	12	13	11	4	12	1889
Business	783	8	12	12	10	12	8	11	14	10	4	7	10	1	3	5	2	3	915
Computer & Info Sciences	191	2	5	1	4	3	3	1	1	2	2	2	0	0	0	1	0	0	218
Education	980	55	36	52	45	41	36	31	31	10	17	10	7	7	10	9	0	1	1378
Engineering	1222	35	43	46	38	30	25	30	28	26	28	25	15	6	3	4	3	10	1617
Health Sciences	2266	61	51	54	43	33	34	38	27	22	22	17	24	8	9	9	1	7	2726
Home Economics	202	1	4	3	3	6	1	2	2	2	4	0	1	1	1	0	0	0	233
Law	221	4	5	8	1	2	0	3	1	2	1	2	2	0	2	2	1	5	262
Library Science	165	1	6	8	10	3	6	7	9	5	4	2	0	2	0	0	1	0	229
Life Sciences	865	36	33	35	30	32	38	32	16	17	16	15	12	6	3	7	0	6	1199
Math & Physical Sciences	1495	57	56	42	42	46	39	31	29	34	24	23	18	10	12	9	3	4	1974
Recreation	81	3	4	5	4	3	2	0	1	0	3	0	0	0	0	0	0	0	106
Science Technologies	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5
Social Sciences & Psych	1964	64	63	42	51	63	40	52	59	35	40	30	27	15	13	11	8	11	2588
Visual & Performing Arts	743	26	36	30	32	27	22	17	19	14	15	13	14	7	3	2	2	12	1034
Other	675	30	31	30	18	14	20	15	17	18	14	6	8	6	3	6	0	5	916
Total	14287	475	486	460	413	401	338	341	320	243	246	192	162	94	76	81	25	77	18717

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-10
Number of Faculty Members by Age and Discipline Cluster, 1987-88

INDEPENDENT BACCALAUREATE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Architecture & Design	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Languages & Letters	317	6	11	9	12	7	8	5	4	6	3	6	5	5	2	1	1	0	408
Business	101	2	1	3	1	1	1	4	3	5	1	1	0	0	1	1	1	1	128
Computer & Info Sciences	24	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
Education	66	3	4	2	1	2	1	3	4	0	0	0	1	1	0	0	1	0	89
Engineering	34	0	0	2	1	0	0	2	1	1	0	0	1	0	0	0	0	0	42
Health Sciences	61	2	5	1	1	0	1	0	1	1	1	0	1	1	1	0	1	0	78
Home Economics	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Library Science	15	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	18
Life Sciences	65	3	1	2	2	1	2	3	3	2	0	1	1	1	0	2	0	0	89
Math & Physical Sciences	181	2	11	2	5	5	3	2	5	0	3	7	0	0	2	0	0	1	229
Recreation	44	1	0	0	2	1	2	1	1	0	0	0	0	0	0	0	0	0	52
Science Technologies	5	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	7
Social Sciences & Psych	237	9	4	7	3	6	7	4	6	8	2	3	2	1	1	1	0	1	302
Visual & Performing Arts	145	4	7	2	2	6	2	1	5	3	0	1	4	2	0	0	0	0	184
Other	30	1	3	2	1	1	1	1	1	1	1	0	1	0	0	0	0	0	44
Total	1333	33	49	34	31	30	28	26	34	27	11	20	18	11	7	5	4	3	1704

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-11
Number of Faculty Members by Age and Discipline Cluster, 1987-88

INDEPENDENT COMPREHENSIVE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	488	24	28	20	16	26	17	22	14	16	15	11	8	9	5	7	2		728
Business	396	5	6	10	4	6	6	11	7	11	4	5	4	1	3	3	2	2	486
Computer & Info Sciences	34	0	4	1	2	0	1	0	1	0	0	0	0	0	0	0	0	0	43
Education	160	6	7	9	12	6	6	0	6	4	2	2	2	1	1	3	0	1	228
Engineering	99	4	9	1	4	1	4	2		3	1	3	1	2	0	0	1	0	135
Health Sciences	80	2	2	1	1	3	1	2	1	0	0	0	0	0	1	1	0	0	95
Home Economics	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Law	95	5	3	2	3	4	0	0	0	0	0	0	2	1	1	0	1	3	120
Library Science	26	0	0	0	1	0	3	1	1	0	1	0	0	0	0	0	1	0	34
Life Sciences	111	4	1	5	4	3	4	2	0	5	5	4	2	1	1	1	0	0	153
Math & Physical Sciences	282	6	11	9	10	12	10	3	3	2	7	5	2	6	4	0	0	0	372
Recreation	22	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	1	0	27
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	357	15	10	10	13	5	8	7	12	10	4	4	6	10	3	4	0	0	478
Visual & Performing Arts	133	6	6	3	9	11	2	2	4	5	1	3	1	3	2	1	0	1	193
Other	102	1	0	6	2	3	2	3	1	4	2	3	1	0	0	2	0	0	132
Total	2390	78	87	78	81	80	64	56	50	60	43	41	29	34	21	22	8	7	3229

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-12
Number of Faculty Members by Age and Discipline Cluster, 1987-88

INDEPENDENT DOCTORAL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	10	1	1	0	0	0	0	0	0	0	2	1	1	1	1	0	0	0	18
Architecture & Design	33	1	2	3	2	1	1	1	0	0	1	1	1	1	0	1	0	0	49
Languages & Letters	974	31	26	34	27	32	34	30	24	30	27	26	17	16	12	10	5	1	1356
Business	485	10	6	12	7	5	4	5	4	6	4	7	6	3	2	2	2	1	571
Computer & Info Sciences	60	0	0	3	1	0	1	1	0	0	0	0	0	1	0	0	0	0	67
Education	164	5	7	6	6	5	6	4	3	0	1	3	1	4	0	0	1	0	216
Engineering	398	12	23	13	4	14	12	10	8	14	14	15	5	4	5	0	1	3	555
Health Sciences	957	32	35	15	25	13	19	27	25	18	13	10	8	6	3	3	1	9	1219
Home Economics	18	1	1	2	4	0	1	1	1	2	1	0	0	0	0	0	0	0	32
Law	210	4	6	8	9	7	6	4	4	4	2	3	3	4	1	1	0	0	276
Library Science	11	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	13
Life Sciences	222	5	8	12	8	8	4	3	9	9	5	5	0	3	3	2	0	0	306
Math & Physical Sciences	560	21	21	13	21	22	22	12	16	16	7	13	14	5	8	1	4	1	777
Recreation	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	3
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	794	78	16	17	15	23	16	19	16	18	24	10	16	12	7	6	7	1	1095
Visual & Performing Arts	294	14	8	13	7	5	12	7	5	3	8	5	3	8	2	1	4	1	400
Other	169	6	9	7	3	3	5	6	10	8	6	7	3	6	1	0	1	0	250
Total	5360	221	169	158	140	138	143	130	125	128	116	107	78	74	45	28	26	17	7203

[1] See Table D-13 for disciplines which comprise these clusters.

Table D-13
Number of Retirees by CIP Category [1]

Discipline Cluster and CIP Description	Number
AGRICULTURE	
01 Agribusiness & Agricultural Production	4
02 Agricultural Sciences	18
03 Renewable Natural Resources	5
Sub-Total	27
ARTS & ARCHITECTURE	
04 Architecture & Environmental Design	5
50 Visual & Performing Arts	31
Sub-Total	36
BUSINESS	
06 Business & Management, General	22
08 Marketing & Distribution	1
Sub-Total	23
LETTERS & LANGUAGES	
09 Communications	10
16 Foreign Languages	22
23 Letters	33
38 Philosophy & Religion	11
39 Theology	4
Sub-Total	80
EDUCATION	
13 Education	49
ENGINEERING	
14 Engineering	29
HEALTH SCIENCES	
18 Health Sciences	41
LIBRARY SCIENCES	
25 Library Sciences	13
LIFE & PHYSICAL SCIENCES	
26 Life Sciences	39
27 Mathematics	17
40 Physical Sciences	34
Sub-Total	90
SOCIAL & BEHAVIORAL SCIENCES	
42 Psychology	22
44 Public Affairs	7
45 Social Sciences	61
Sub-Total	90
OTHER DISCIPLINES	
11 Computer & Information Sciences	3
19 Home Economics	6
22 Law	7
31 Parks & Recreation	1
36 Leisure & Recreation Skills	4
Sub-Total	21
TOTAL	500

[1] CIP codes and descriptions are drawn from the federal Classification of Instructional Programs.

APPENDIX E

Factors in Retirees' Retirement Planning
Chi-Square Analyses

Table E–1
Factors in Retiree's Retirement Planning

CHI-SQUARE OF FACTORS ON DISCIPLINE (D.F. = 20)

Factor	N	Value	Prob.
Overall financial status	484	19.113	0.515
Eligibiltiy for full retirement benefits	476	30.274	0.066
Desirability of more personal/family time	485	33.241	0.032 *
Other interests	476	20.105	0.451
Working conditions and policies	484	43.563	0.002 *
Availability of early retirement incentive benefits	471	28.295	0.103
Personal health	484	19.349	0.499
Annual salary increases	481	26.018	0.165
Availability of emeritus benefits	476	15.203	0.765
Mandatory retirement policies	488	21.528	0.367
Other employment opportunities, incl. self-employment	470	22.995	0.289
Health of spouse	471	30.257	0.066
Administrative pressure	480	29.644	0.076
State of the economy	477	33.536	0.029 *
Interaction with co-workers	480	18.148	0.578
Budget cutbacks	481	38.276	0.008 *
Curricular revision	481	23.041	0.287
Timing of spouse's retirement	470	15.704	0.735

* Analysis of factor by discipline and degree of importance significant at the .05 level.

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Table E-2
Factors in Retiree's Retirement Planning

CHI-SQUARE OF FACTORS ON GENDER (D.F. = 2)

Factor	N	Value	Prob.
Overall financial status	491	0.555	0.758
Eligibiltiy for full retirement benefits	482	0.240	0.887
Desirability of more personal/family time	491	1.366	0.505
Other interests	483	7.610	0.022 *
Working conditions and policies	491	10.538	0.005 *
Availability of early retirement incentive benefits	478	1.325	0.515
Personal health	491	1.050	0.592
Annual salary increases	488	0.302	0.860
Availability of emeritus benefits	483	0.022	0.989
Mandatory retirement policies	495	0.858	0.651
Other employment opportunities, incl. self-employment	477	1.520	0.468
Health of spouse	478	1.597	0.450
Administrative pressure	487	6.759	0.034 *
State of the economy	484	3.249	0.197
Interaction with co-workers	487	6.991	0.030 *
Budget cutbacks	488	2.561	0.278
Curricular revision	488	2.661	0.264
Timing of spouse's retirement	477	3.030	0.220

* Analysis of factor by gender and degree of importance significant at the .05 level.

APPENDIX F

Retirement Distributions by Age and Discipline

Table F-1
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

ALL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	2	0	0	1	1	1	5	5	6	4	6	3	2	1	3	0	1	41
Architecture & Design	0	0	1	0	0	0	1	2	1	1	0	1	1	1	0	0	1	0	10
Languages & Letters	0	2	0	0	2	0	4	4	11	3	8	17	12	10	9	4	21	8	115
Business	1	2	2	2	0	1	1	1	1	3	2	7	3	2	3	1	9	4	45
Computer & Info Sciences	0	1	0	0	1	0	2	0	0	0	0	1	0	0	0	1	0	0	6
Education	1	3	2	4	2	5	10	5	10	6	4	8	7	0	0	5	7	0	79
Engineering	1	1	0	0	0	0	1	0	7	4	3	7	3	3	2	1	2	2	37
Health Sciences	2	2	1	0	0	1	4	7	7	6	3	11	6	3	6	0	10	1	70
Home Economics	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3
Law	1	0	0	0	0	0	1	0	0	1	1	1	2	2	0	1	3	1	14
Library Science	0	0	0	1	0	0	0	1	2	1	3	2	0	0	0	0	2	0	12
Life Sciences	0	1	1	0	2	1	7	3	4	1	4	8	5	3	0	5	5	1	51
Math & Physical Sciences	2	2	0	2	1	2	1	3	18	5	5	13	7	5	1	1	12	3	83
Recreation	0	0	0	0	0	0	2	0	0	0	1	0	0	1	0	0	0	0	4
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	2	1	1	4	0	0	2	3	10	9	3	15	8	6	6	2	20	2	94
Visual & Performing Arts	1	1	0	1	1	1	0	4	2	4	4	8	1	1	1	1	8	1	40
Other	3	0	1	1	1	2	3	0	6	4	1	6	1	1	1	1	3	0	35
Total	14	18	9	15	11	14	40	38	84	54	47	112	60	40	30	26	103	24	739

[1] See Table D-13 for detail on these classifications.

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Table F-2
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

PUBLIC INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	2	0	0	1	1	1	5	5	6	4	5	3	2	1	3	0	1	40
Architecture & Design	0	0	1	0	0	0	1	2	1	1	0	1	1	1	0	0	0	0	9
Languages & Letters	0	2	0	0	0	0	2	1	9	3	5	6	7	4	4	3	8	5	59
Business	0	2	2	2	0	0	0	1	1	1	0	2	2	1	0	1	3	3	21
Computer & Info Sciences	0	1	0	0	1	0	2	0	0	0	0	0	0	0	0	1	0	0	5
Education	1	3	1	4	2	5	10	3	7	4	3	6	5	0	0	5	1	0	60
Engineering	1	0	0	0	0	0	1	0	4	2	1	4	2	1	2	0	0	1	19
Health Sciences	1	1	1	0	0	0	2	4	4	3	2	6	5	2	4	0	6	1	42
Home Economics	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Law	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	4
Library Science	0	0	0	1	0	0	0	0	1	0	3	2	0	0	0	0	0	0	7
Life Sciences	0	1	1	0	1	1	5	3	2	0	4	6	4	3	0	3	5	1	40
Math & Physical Sciences	2	2	0	1	0	1	0	1	4	4	5	10	3	5	1	0	7	0	46
Recreation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	3
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	2	1	1	4	0	0	1	2	5	8	2	13	7	3	5	2	10	1	67
Visual & Performing Arts	1	1	0	1	1	1	0	2	0	1	3	7	1	0	1	0	6	1	27
Other	2	0	1	1	1	2	3	0	5	3	1	5	0	1	1	0	2	0	28
Total	11	16	8	14	7	11	29	24	48	36	34	74	41	24	19	18	50	15	479

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[1] See Table D-13 for detail on these classifications.

Table F-3
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

INDEPENDENT INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Languages & Letters	0	0	0	0	2	0	2	3	2	0	3	11	5	6	5	1	13	3	56
Business	1	0	0	0	0	1	1	0	0	2	2	5	1	1	3	0	6	1	24
Computer & Info Sciences	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Education	0	0	1	0	0	0	0	2	3	2	1	2	2	0	0	0	6	0	19
Engineering	0	1	0	0	0	0	0	0	3	2	2	3	1	2	0	1	2	1	18
Health Sciences	1	1	0	0	0	1	2	3	3	3	1	5	1	1	2	0	4	0	28
Home Economics	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Law	0	0	0	0	0	0	1	0	0	1	1	1	2	2	0	1	1	0	10
Library Science	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	2	0	5
Life Sciences	0	0	0	0	1	0	2	0	2	1	0	2	1	0	0	2	0	0	11
Math & Physical Sciences	0	0	0	1	1	1	1	2	14	1	0	3	4	0	0	1	5	3	37
Recreation	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	0	0	0	0	0	1	1	5	1	1	2	1	3	1	0	10	1	27
Visual & Performing Arts	0	0	0	0	0	0	0	2	2	3	1	1	0	1	0	1	2	0	13
Other	1	0	0	0	0	0	0	0	1	1	0	1	1	0	0	1	1	0	7
Total	3	2	1	1	4	3	11	14	36	18	13	38	19	16	11	8	53	9	260

[1] See Table D-13 for detail on these classifications.

Table F–4
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987–88

BACCALAUREATE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	0	1	0	0	0	0	2	0	3	1	1	7	2	0	1	0	0	0	18
Business	1	2	1	0	0	0	0	0	1	1	0	2	2	0	0	0	0	0	10
Computer & Info Sciences	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Education	0	0	0	0	1	2	1	3	0	0	0	0	1	0	0	0	1	0	9
Engineering	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3
Health Sciences	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3
Home Economics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Library Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Life Sciences	0	0	1	0	0	0	1	0	1	0	1	1	1	1	0	1	0	0	8
Math & Physical Sciences	0	0	0	1	0	1	0	1	12	1	1	5	0	1	0	0	0	0	23
Recreation	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	2
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	2	0	0	0	0	0	1	0	3	2	1	1	1	0	2	0	2	0	15
Visual & Performing Arts	1	1	0	0	0	0	0	0	2	0	1	0	0	1	1	0	0	0	7
Other	1	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	6
Total	7	5	3	1	2	3	9	4	24	6	6	17	7	5	4	1	3	0	107

[1] See Table D-13 for detail on these classifications.

Table F-5
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

COMPREHENSIVE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	0	1	0	0	1	0	2	3	1	0	1	3	1	2	1	1	3	1	21
Business	0	0	1	2	0	0	1	0	0	1	0	1	0	0	0	0	5	0	11
Computer & Info Sciences	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	1	1	3	1	1	3	0	3	3	0	0	0	0	0	1	3	0	20
Engineering	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3
Health Sciences	0	0	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	5
Home Economics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Library Science	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	3
Life Sciences	0	0	0	0	1	0	2	0	0	0	0	1	0	0	0	1	0	0	5
Math & Physical Sciences	0	0	0	1	0	0	0	0	2	1	0	0	2	0	0	0	0	0	6
Recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	1	0	2	0	0	0	2	3	1	1	3	1	3	1	0	1	0	19
Visual & Performing Arts	0	0	0	1	0	0	0	1	0	2	0	1	0	0	0	1	0	0	6
Other	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	5
Total	1	4	2	9	3	1	9	8	11	9	2	12	5	7	3	4	15	1	106

[1] See Table D-13 for detail on these classifications.

Table F–6
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987–88

DOCTORAL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	2	0	0	1	1	1	5	5	6	4	6	3	2	1	3	0	1	41
Architecture & Design	0	0	1	0	0	0	1	2	1	1	0	1	1	1	0	0	1	0	10
Languages & Letters	0	0	0	0	1	0	0	1	7	2	6	7	9	8	7	3	18	7	76
Business	0	0	0	0	0	1	0	1	0	1	2	4	1	2	3	1	4	4	24
Computer & Info Sciences	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3
Education	1	2	1	1	0	2	6	2	7	3	4	8	6	0	0	4	3	0	50
Engineering	0	0	0	0	0	0	0	0	6	4	3	7	3	2	2	1	1	2	31
Health Sciences	1	2	1	0	0	1	3	6	7	6	3	8	6	2	5	0	10	1	62
Home Economics	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3
Law	1	0	0	0	0	0	1	0	0	1	1	1	1	1	0	1	3	1	12
Library Science	0	0	0	1	0	0	0	0	1	0	3	2	0	0	0	0	2	0	9
Life Sciences	0	1	0	0	1	1	4	3	3	1	3	6	4	2	0	3	5	1	38
Math & Physical Sciences	2	2	0	0	1	1	1	2	4	3	4	8	5	4	1	1	12	3	54
Recreation	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	0	1	2	0	0	1	1	4	6	1	11	6	3	3	2	17	2	60
Visual & Performing Arts	0	0	0	0	1	1	0	3	0	2	3	7	1	0	0	0	8	1	27
Other	1	0	0	1	1	2	2	0	4	3	0	5	1	1	1	1	1	0	24
Total	6	9	4	5	6	10	22	26	49	39	39	83	48	28	23	21	85	23	526

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[1] See Table D-13 for detail on these classifications.

Table F-7
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

PUBLIC BACCALAUREATE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	0	1	0	0	0	0	1	0	2	1	1	3	0	0	1	0	0	0	10
Business	0	2	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	6
Computer & Info Sciences	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Education	0	0	0	0	1	2	1	2	0	0	0	0	1	0	0	0	0	0	7
Engineering	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Health Sciences	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
Home Economics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Library Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Life Sciences	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	4
Math & Physical Sciences	0	0	0	1	0	1	0	1	0	1	1	4	0	1	0	0	0	0	10
Recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	2	0	0	0	0	0	0	0	1	2	1	0	1	0	1	0	1	0	9
Visual & Performing Arts	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	4
Other	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	4
Total	5	5	3	1	2	3	6	3	4	5	6	8	3	4	3	0	1	0	62

[1] See Table D-13 for detail on these classifications.

Table F-8
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

PUBLIC COMPREHENSIVE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	0	1	0	0	0	0	1	1	1	0	0	1	1	0	0	0	2	0	8
Business	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
Computer & Info Sciences	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	1	1	3	1	1	3	0	1	3	0	0	0	0	0	1	1	0	16
Engineering	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Health Sciences	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0	0	4
Home Economics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Library Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Life Sciences	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Math & Physical Sciences	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	1	0	2	0	0	0	1	2	1	0	3	1	1	1	0	0	0	13
Visual & Performing Arts	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Other	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	4
Total	1	3	2	8	2	1	5	2	6	5	0	8	2	1	2	1	5	0	54

[1] See Table D-13 for detail on these classifications.

Table F-9
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987–88

PUBLIC DOCTORAL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	2	0	0	1	1	1	5	5	6	4	5	3	2	1	3	0	1	40
Architecture & Design	0	0	1	0	0	0	1	2	1	1	0	1	1	1	0	0	0	0	9
Languages & Letters	0	0	0	0	0	0	0	0	6	2	4	2	6	4	3	3	6	5	41
Business	0	0	0	0	0	0	0	1	0	1	0	1	1	1	0	1	2	3	11
Computer & Info Sciences	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
Education	1	2	0	1	0	2	6	1	6	1	3	6	4	0	0	4	0	0	37
Engineering	0	0	0	0	0	0	0	0	4	2	1	4	2	1	2	0	0	1	17
Health Sciences	0	1	1	0	0	0	1	4	4	3	2	4	5	1	3	0	6	1	36
Home Economics	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Law	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	4
Library Science	0	0	0	1	0	0	0	0	1	0	3	2	0	0	0	0	0	0	7
Life Sciences	0	1	0	0	0	1	4	3	2	0	3	5	4	2	0	3	5	1	34
Math & Physical Sciences	2	2	0	0	0	0	0	0	3	2	4	6	3	4	1	0	7	0	34
Recreation	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	0	1	2	0	0	1	1	2	5	1	10	5	2	3	2	9	1	45
Visual & Performing Arts	0	0	0	0	1	1	0	2	0	1	2	7	1	0	0	0	6	1	22
Other	1	0	0	1	1	2	2	0	4	2	0	4	0	1	1	0	1	0	20
Total	5	8	3	5	3	7	18	19	38	26	28	58	36	19	14	17	44	15	363

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[1] See Table D-13 for detail on these classifications.

Table F-10
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

INDEPENDENT BACCALAUREATE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	0	0	0	0	0	0	1	0	1	0	0	4	2	0	0	0	0	0	8
Business	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	4
Computer & Info Sciences	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
Engineering	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Health Sciences	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Home Economics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Library Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Life Sciences	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	4
Math & Physical Sciences	0	0	0	0	0	0	0	0	12	0	0	1	0	0	0	0	0	0	13
Recreation	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	0	0	0	0	0	1	0	2	0	0	1	0	0	1	0	1	0	6
Visual & Performing Arts	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3
Other	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Total	2	0	0	0	0	0	3	1	20	1	0	9	4	1	1	1	2	0	45

[1] See Table D-13 for detail on these classifications.

Table F-11
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

INDEPENDENT COMPREHENSIVE INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Languages & Letters	0	0	0	0	1	0	1	2	0	0	1	2		2	1	1	1	1	13
Business	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	4	0	7
Computer & Info Sciences	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	4
Engineering	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3
Health Sciences	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Home Economics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Law	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Library Science	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	3
Life Sciences	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	3
Math & Physical Sciences	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4
Recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	0	0	0	0	0	0	1	1	0	1	0	0	2	0	0	1	0	6
Visual & Performing Arts	0	0	0	0	0	0	0	1	0	2	0	1	0	0	0	1	0	0	5
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	1	0	1	1	0	4	6	5	4	2	4	3	6	1	3	10	1	52

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[1] See Table D-13 for detail on these classifications.

Table F-12
Number of Faculty Retirements by Age of the Retiring Faculty Member and by Discipline Cluster, 1987-88

INDEPENDENT DOCTORAL INSTITUTIONS

Discipline [1] Cluster	under 55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71 or older	Total
Agriculture	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Architecture & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Languages & Letters	0	0	0	0	1	0	0	1	1	0	2	5	3	4	4	0	12	2	35
Business	0	0	0	0	0	1	0	0	0	0	2	3	0	1	3	0	2	1	13
Computer & Info Sciences	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Education	0	0	1	0	0	0	0	1	1	2	1	2	2	0	0	0	3	0	13
Engineering	0	0	0	0	0	0	0	0	2	2	2	3	1	1	0	1	1	1	14
Health Sciences	1	1	0	0	0	1	2	2	3	3	1	4	1	1	2	0	4	0	26
Home Economics	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Law	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0	1	1	0	8
Library Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Life Sciences	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	4
Math & Physical Sciences	0	0	0	0	1	1	1	2	1	1	0	2	2	0	0	1	5	3	20
Recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science Technologies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Social Sciences & Psych	0	0	0	0	0	0	0	0	2	1	0	1	1	1	0	0	8	1	15
Visual & Performing Arts	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	2	0	5
Other	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	4
Total	1	1	1	0	3	3	4	7	11	13	11	25	12	9	9	4	41	8	163

[1] See Table D-13 for detail on these classifications.

APPENDIX G

Retirement Projections for Selected Disciplines

Table G-1
Projected Faculty Retirements [1]

LANGUAGES AND LETTERS

	Beg Yr	Beg Yr																		End Yr			
	Faculty	Entering					——— Number of Faculty at Year-End by Age Cohort ———													Faculty	Other		5-Yr
Year	Over 50	Cohort	50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	Over 50	Trans	Rets	Rets
1988-89	1,990	117	578	116	131	132	124	114	121	103	106	81	77	84	51	42	37	25	26	4	1,952	25	129	
1989-90	1,952	117	572	114	112	129	129	121	111	113	96	90	71	68	59	41	34	30	20	5	1,917	23	129	
1990-91	1,917	117	568	113	111	110	125	126	117	103	105	82	80	64	48	47	34	27	24	6	1,890	23	121	
1991-92	1,890	117	564	112	110	109	107	122	122	109	96	89	72	71	45	39	39	27	22	6	1,860	22	124	
1992-93	1,860	117	561	111	109	108	106	104	119	114	102	82	79	64	50	36	32	31	22	6	1,834	22	122	625
1993-94	1,834	174	616	111	108	107	105	103	101	110	106	86	72	70	46	40	29	25	25	6	1,867	22	119	
1994-95	1,867	174	658	121	108	106	104	102	100	94	103	90	76	64	50	36	33	24	20	5	1,895	23	123	
1995-96	1,895	174	692	130	118	105	103	101	99	93	88	87	79	68	45	40	30	26	19	5	1,930	23	117	
1996-97	1,930	174	719	137	126	116	103	101	98	92	87	75	77	71	48	36	33	24	21	5	1,968	23	113	
1997-98	1,968	174	740	142	133	124	112	100	98	92	86	74	66	69	50	38	30	26	19	5	2,003	24	116	588
1998-99	2,003	178	760	146	138	130	120	110	97	91	85	73	65	59	49	40	31	24	21	5	2,045	24	112	
1999-00	2,045	178	776	150	142	135	126	117	107	90	85	72	65	58	42	39	33	25	19	5	2,086	24	112	
2000-01	2,086	178	789	153	146	139	131	123	114	99	84	72	64	57	41	33	32	26	20	5	2,130	25	109	
2001-02	2,130	178	799	156	149	143	135	128	120	106	92	72	64	57	41	33	27	25	21	5	2,173	25	110	
2002-03	2,173	178	807	158	151	146	139	132	125	112	99	79	63	57	40	33	27	22	21	5	2,213	25	112	555

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H, Table H-1. Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:
Ages 50-64: 0.99 -- i.e., faculty who exit the model = 1%   Ages 65 + : 0.98 -- i.e., faculty who exit the model = 2%

Table G-2
Projected Faculty Retirements [1]

BUSINESS

	Beg Yr	Beg Yr	Number of Faculty at Year-End by Age Cohort																		End Yr			
Year	Faculty Over 50	Entering Cohort	0-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	Faculty Over 50	Other Trans	Rets	5-Yr Rets
1988-89	761	67	329	66	39	34	46	30	32	27	34	28	32	14	18	18	6	7	10	2	771	10	46	
1989-90	771	67	326	65	64	38	33	45	29	30	25	29	25	28	10	14	15	5	6	1	788	9	41	
1990-91	788	67	323	64	63	63	37	33	43	27	28	21	26	22	20	8	11	12	4	1	806	9	39	
1991-92	806	67	321	64	62	62	61	36	32	40	25	24	19	23	16	16	7	9	10	2	829	9	35	
1992-93	829	67	319	63	62	61	60	59	35	29	38	22	21	17	16	13	13	5	7	2	843	10	42	203
1993-94	843	99	350	63	62	61	60	59	58	33	27	32	19	19	12	13	10	11	4	1	892	10	40	
1994-95	892	99	375	69	61	60	59	58	57	54	30	23	28	17	13	10	11	8	8	2	944	11	36	
1995-96	944	99	394	74	67	60	59	58	56	53	50	26	21	25	12	11	8	9	7	2	990	11	43	
1996-97	990	99	409	78	72	66	58	57	56	53	49	43	23	18	18	10	9	6	7	2	1,033	12	45	
1997-98	1,033	99	421	81	75	70	64	57	56	52	49	42	38	20	13	14	8	7	5	1	1,073	12	46	211
1998-99	1,073	101	433	83	78	74	68	62	55	52	49	42	37	33	14	10	12	6	6	1	1,116	12	46	
1999-00	1,116	101	442	85	81	77	72	67	61	52	48	41	37	33	24	12	8	9	5	1	1,154	13	51	
2000-01	1,154	101	449	87	83	79	75	70	65	56	48	41	36	33	23	19	9	7	7	2	1,191	13	51	
2001-02	1,191	101	455	89	85	81	77	73	68	60	53	41	36	32	23	19	16	8	5	1	1,221	14	56	
2002-03	1,221	101	459	90	86	83	79	75	71	64	56	45	36	32	23	19	15	12	6	2	1,252	14	56	260

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H, Table H-1. Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:
Ages 50-64: 0.99 -- i.e. faculty who exit the model = 1%   Ages 65 + : 0.98 -- i.e. faculty who exit the model = 2%

Table G-3
Projected Faculty Retirements [1]

COMPUTER AND INFO SCIENCES

Year	Beg Yr Faculty Over 50	Beg Yr Entering Cohort					—— Number of Faculty at Year-End by Age Cohort ——													End Yr Faculty Over 50	Other Trans	Rets	5-Yr Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71				
1988-89	121	13	66	13	4	11	5	10	3	6	4	2	2	3	1	0	1	0	1	0	130	3	2	
1989-90	130	13	65	13	13	4	10	5	9	3	5	3	2	2	2	1	0	1	0	0	138	1	4	
1990-91	138	13	65	13	13	13	4	10	5	9	3	4	3	1	1	1	1	0	1	0	146	2	4	
1991-92	146	13	65	13	13	12	12	4	10	4	8	2	4	2	1	1	1	1	0	0	153	2	5	
1992-93	153	13	64	13	12	12	12	12	4	9	4	7	2	3	2	1	1	1	1	0	160	2	5	20
1993-94	160	20	70	13	12	12	12	12	12	3	9	3	6	2	2	1	1	1	1	0	172	2	6	
1994-95	172	20	75	14	12	12	12	12	11	11	3	7	3	5	1	2	1	0	0	0	184	2	6	
1995-96	184	20	79	15	13	12	12	12	11	11	10	3	6	3	4	1	2	1	0	0	195	2	7	
1996-97	195	20	82	16	14	13	12	12	11	11	10	9	2	6	2	3	1	1	1	0	205	2	7	
1997-98	205	20	85	16	15	14	13	11	11	10	10	8	8	2	4	2	3	1	1	0	214	2	9	35
1998-99	214	20	87	17	16	15	14	13	11	10	10	8	7	7	1	3	1	2	1	0	223	2	9	
1999-00	223	20	89	17	16	15	14	13	12	10	10	8	7	7	5	1	3	1	2	0	232	3	9	
2000-01	232	20	90	18	17	16	15	14	13	11	10	8	7	7	5	4	1	2	1	0	238	3	11	
2001-02	238	20	91	18	17	16	15	15	14	12	11	8	7	7	5	4	3	1	2	0	245	3	10	
2002-03	245	20	92	18	17	17	16	15	14	13	11	9	7	6	5	4	3	2	1	0	251	3	12	51

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H, Table H-1. Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement: Ages 50-64: 0.99 -- i.e, faculty who exit the model = 1% Ages 65 + : 0.98 -- i.e, faculty who exit the model = 2%

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Table G-4
Projected Faculty Retirements [1]

LIFE SCIENCES

Year	Beg Yr Faculty Over 50	Beg Yr Entering Cohort	Number of Faculty at Year-End by Age Cohort																		End Yr Faculty Over 50	Other Trans	Rets	5-Yr Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71				
1988-89	768	45	220	44	52	48	58	49	53	50	46	25	31	25	19	13	9	6	10	2	761	10	41	
1989-90	761	45	218	43	43	51	47	57	47	50	47	39	23	28	17	15	11	7	5	1	749	9	48	
1990-91	749	45	216	43	42	42	50	46	55	44	46	40	34	20	19	14	12	9	6	1	741	9	44	
1991-92	741	45	215	43	42	41	41	49	44	51	41	39	35	31	14	16	11	10	7	2	732	9	44	
1992-93	732	45	214	42	41	41	40	40	47	41	48	35	35	31	22	11	13	9	8	2	721	9	47	225
1993-94	721	66	234	42	41	41	40	39	39	44	38	41	31	31	22	17	9	10	7	2	729	9	49	
1994-95	729	66	251	46	41	40	40	39	38	36	41	33	36	27	22	18	14	7	8	2	739	9	47	
1995-96	739	66	264	49	45	40	39	39	38	35	33	35	29	32	19	18	14	11	6	2	749	9	48	
1996-97	749	66	274	52	48	44	39	38	37	35	33	28	31	26	23	16	14	12	9	2	761	9	45	
1997-98	761	66	282	54	51	47	43	38	37	35	33	28	25	27	18	18	13	11	9	2	772	9	46	236
1998-99	772	68	289	56	52	50	46	42	37	35	32	28	25	22	19	15	15	10	9	2	784	9	46	
1999-00	784	68	296	57	54	51	48	45	41	34	32	28	25	22	16	16	12	12	8	2	798	9	45	
2000-01	798	68	300	58	55	53	50	47	43	38	32	27	24	22	16	13	13	10	10	2	814	9	43	
2001-02	814	68	304	59	57	54	51	49	46	40	35	27	24	22	15	13	10	10	8	2	827	10	44	
2002-03	827	68	307	60	58	56	53	50	47	42	38	30	24	22	15	12	10	8	8	2	843	10	42	220

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H, Table H-1. Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:
Ages 50-64: 0.99 -- i.e., faculty who exit the model = 1%   Ages 65+: 0.98 -- i.e., faculty who exit the model = 2%.

Table G-5
Projected Faculty Retirements [1]

MATH AND PHYSICAL SCIENCES

Year	Beg Yr Faculty Over 50	Beg Yr Entering Cohort	Number of Faculty at Year-End by Age Cohort																		End Yr Faculty Over 50	Other Trans	Rets	5-Yr Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71				
1988-89	1,420	93	461	92	97	109	83	87	97	79	54	54	49	41	38	28	17	21	10	2	1,416	18	79	
1989-90	1,416	93	456	91	89	95	106	81	84	90	74	46	47	43	29	30	23	14	17	4	1,420	17	73	
1990-91	1,420	93	453	90	88	88	93	103	78	79	84	63	41	42	31	23	25	18	11	3	1,411	17	85	
1991-92	1,411	93	450	89	87	87	85	90	100	73	73	72	55	36	30	25	19	20	15	4	1,410	17	79	
1992-93	1,410	93	448	89	87	86	84	83	88	93	68	62	63	49	26	24	20	15	16	4	1,405	16	82	398
1993-94	1,405	139	491	88	86	85	83	82	81	82	87	58	55	56	35	20	20	16	12	3	1,440	16	87	
1994-95	1,440	139	525	97	86	85	83	81	80	75	76	74	51	49	40	28	17	16	13	3	1,477	17	85	
1995-96	1,477	139	552	104	94	84	82	81	79	74	70	65	65	45	35	32	23	13	13	3	1,514	18	85	
1996-97	1,514	139	573	109	101	92	82	80	78	74	69	60	57	58	32	28	26	18	11	3	1,551	18	84	
1997-98	1,551	139	590	113	106	99	90	80	78	73	69	59	53	51	41	26	23	21	15	4	1,587	19	83	423
1998-99	1,587	142	606	116	110	104	96	88	78	73	68	58	52	47	36	33	21	18	17	4	1,624	19	87	
1999-00	1,624	142	619	120	113	108	101	94	85	72	68	58	51	46	33	29	27	17	15	4	1,658	19	88	
2000-01	1,658	142	629	122	116	111	105	98	91	79	67	57	51	46	33	27	24	22	14	3	1,694	20	86	
2001-02	1,694	142	637	124	119	114	108	102	96	85	74	57	51	45	32	26	22	19	17	4	1,732	20	84	
2002-03	1,732	142	643	126	121	116	111	105	99	89	79	63	50	45	32	26	21	17	15	4	1,763	20	90	436

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H, Table H-1. Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:
Ages 50-64: 0.99 -- i.e., faculty who exit the model = 1%   Ages 65 +: 0.98 -- i.e., faculty who exit the model = 2%

Table G-6
Projected Faculty Retirements [1]

SOCIAL SCIENCES AND PSYCHOLOGY

Year	Beg Yr Faculty Over 50	Beg Yr Entering Cohort	—— Number of Faculty at Year-End by Age Cohort ——																		End Yr Faculty Over 50	Other Trans	Rets	5-Yr Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71				
1988-89	1,909	125	616	123	179	112	94	99	111	79	89	86	72	71	37	44	35	22	19	3	1,891	24	119	
1989-90	1,891	125	610	122	120	175	109	92	96	103	74	76	76	64	50	30	36	28	18	5	1,881	22	112	
1990-91	1,881	125	605	120	118	117	170	106	89	89	96	63	67	68	45	40	24	29	22	6	1,876	22	108	
1991-92	1,876	125	601	119	117	116	114	166	103	83	83	82	55	60	48	36	33	19	23	6	1,865	22	113	
1992-93	1,865	125	598	119	116	115	113	111	162	96	78	71	72	49	42	38	30	26	16	4	1,854	22	113	566
1993-94	1,854	186	656	118	115	114	111	110	108	150	89	66	62	64	35	34	31	24	21	5	1,915	22	103	
1994-95	1,915	186	702	130	115	113	111	109	107	101	140	76	58	55	45	28	28	25	19	5	1,965	23	112	
1995-96	1,965	186	738	139	126	112	110	108	106	99	94	119	67	52	39	36	23	22	20	5	2,015	23	113	
1996-97	2,015	186	766	146	134	123	109	107	105	98	93	80	105	60	37	31	30	18	18	5	2,065	24	112	
1997-98	2,065	186	789	151	141	132	120	107	104	98	92	79	70	94	42	29	26	24	15	4	2,115	24	111	551
1998-99	2,115	190	810	156	147	139	128	117	104	97	91	78	69	63	66	34	24	21	19	5	2,167	25	113	
1999-00	2,167	190	828	160	151	144	135	125	114	96	90	77	69	62	44	53	28	19	17	4	2,216	26	115	
2000-01	2,216	190	841	163	155	148	140	132	122	106	90	77	68	61	44	36	43	22	15	4	2,267	26	112	
2001-02	2,267	190	852	166	159	152	144	137	128	113	99	76	68	61	43	35	29	35	18	5	2,318	27	112	
2002-03	2,318	190	860	168	161	155	148	141	133	119	105	84	67	60	43	35	29	23	28	7	2,367	27	114	566

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Appendix H, Table H-1. Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:
Ages 50-64: 0.99 -- i.e., faculty who exit the model = 1% Ages 65 + : 0.98 -- i.e., faculty who exit the model = 2%.

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APPENDIX H

Projection Methods and Projected Faculty Retirements

Projection Methods and Projected Faculty Retirements

While most of the inputs required for this model are provided by the data collected for this study, other information is needed as well. The Penn State/TIAA-CREF survey age distributions provide only aggregate numbers for faculty below age 55. This is not in general a major impediment, since few faculty retire before age 55. However, modeling the flow of today's younger faculty in later years (for example, faculty who were 50 in 1987-88 and who will be 60 in 1997-98) requires estimates of the age distribution of faculty below age 55. National Science Foundation (1989) data on the ages of doctoral scientists and engineers, including social and behavioral scientists, were used for this purpose (see Table H-1).

Table H-1

Age Distribution of Doctoral Scientists and Engineers Employed by Educational Institutions in 1977, 1983 and 1987 [1]

	1977		1983		1987	
AGE	#	%	#	%	#	%
Under 30	5,421	3.31	3,561	1.82	2,549	1.17
30-34	30,166	18.43	24,396	12.45	24,063	11.02
35-39	37,204	22.73	36,687	18.72	35,689	16.35
40-44	25,916	15.83	40,899	20.87	41,243	18.89
45-49	22,468	13.73	27,623	14.10	40,375	18.49
50-54	18,028	11.01	23,425	11.95	27,143	12.43
55-59	13,196	8.06	19,044	9.72	21,964	10.06
60-64	7,805	4.77	13,249	6.76	16,346	7.49
65 & Over	3,476	2.12	7,060	3.60	8,946	4.10
Sub-Total	163,680	100.00	195,944	100.00	218,318	100.00
No Report	97		106		379	
Total	163,777		196,050		218,697	

[1] In 1987, 98.2 percent of these were in colleges or universities.

Source: Characteristics of Doctoral Scientists and Engineers in the United States: 1987. National Science Foundation, 1989.

Retirement projections in this study are calculated for faculty from ages 55 through 71, using the study's primary data on age distribution (Appendix D) and retirements by age (Appendix F). In other words, future retirements are predicted based, for the most part, on past patterns of retirement. In addition, data from other sources are used to develop two sets of supplemental estimates used by the model. First, transition rates for non-retirements are estimated as described in Projections, page 35 (it appears that about one-half percent to two percent of faculty age 50 and over leave for non-retirement reasons). Second, the age distribution of faculty below age 55 is estimated from National Science Foundation figures (as shown in Table H-1).

The projections in Tables H-2, H-3, and H-4 are based on the assumption that the number of faculty in the system at the end of a given year must equal the number at the beginning of the year, plus new entries, and minus any exits. That is,

Ending number of faculty = Beginning + Entries - Retirements - Other Exits
or
Retirements = Beginning + Entries - Other Exits - Ending number of faculty

The actual calculations can be illustrated by examining the progression of a single cohort through the model. For example, Table H-2 shows 848 faculty age 55 in 1988-89. Moving diagonally through the model, the table shows 832 faculty age 56 in 1989-90, 824 faculty age 57 in 1990-91, and so on. How is the progression from 848 in 1988-89 to 832 in 1989-90 calculated?

As with other estimates in Table H-2, the projection from 848 to 832 is based on the actual retirement rates of faculty, by age, using the study's primary data. Retirement rates are calculated by dividing the number of retirements by the number of faculty of a given age in 1987-88. For example, there were 18 retirees (Appendix F) at age 55 out of a total of 941 faculty (Appendix D) at age 55. The retirement rate is 18/941, or approximately .01913. Multiplying .01913 times 848 (the number of faculty) yields the estimate of 16, the number of retirees in the cohort. Because Table H-2 represents the "high survival rate" model (with no faculty exiting for reasons other than retirement), the estimated number of 56-year-old faculty in 1990-91 is 848 minus 16, or 832. (Under alternative assumptions about survival rates, an additional percentage of the cohort would be lost to other transitions. Here the transition factor is zero; zero times 848 equals zero).

In Tables H-2, H-3, and H-4, this technique is used to estimate the number of faculty in each age cohort at year-end for each year 1988-89 through 2002-03. Estimates of the numbers of retirements and transitions for each age cohort are summed to yield estimates of the total numbers of retirements and other transitions for each year.

Table H-2

Projected Faculty Retirements [1]

High Survival Rate

Year	Beg Yr Faculty Over 50	Beg Yr Enter. Cohort	Number of Faculty at Year-End by Age Cohort																		End Yr Faculty Over 50	Oth. Trans	Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71			
1988-89	12,785	1,265	4,657	848	923	913	835	769	746	624	603	508	449	420	281	254	190	126	120	27	13,293	0	757
1989-90	13,293	1,265	4,978	928	832	914	897	823	755	701	587	517	453	404	300	227	210	153	104	27	13,812	0	747
1990-91	13,812	1,265	5,235	992	911	824	898	884	808	709	659	504	462	408	289	243	188	169	126	33	14,342	0	735
1991-92	14,342	1,265	5,439	1,043	973	902	809	885	868	759	667	566	450	415	292	234	201	152	139	36	14,831	0	776
1992-93	14,831	1,265	5,602	1,084	1,024	964	886	798	869	816	714	573	505	404	297	236	193	162	125	33	15,283	0	812
1993-94	15,283	1,293	5,760	1,117	1,063	1,014	947	873	783	817	767	613	511	454	289	240	195	156	133	35	15,767	0	809
1994-95	15,767	1,293	5,886	1,148	1,095	1,053	996	934	857	736	768	658	547	460	325	234	198	157	128	34	16,214	0	846
1995-96	16,214	1,293	5,986	1,173	1,126	1,085	1,034	982	916	806	692	659	588	492	329	263	193	160	129	34	16,647	0	860
1996-97	16,647	1,293	6,066	1,193	1,151	1,115	1,065	1,020	964	861	758	594	588	529	352	266	217	156	132	34	17,061	0	879
1997-98	17,061	1,293	6,130	1,209	1,170	1,140	1,096	1,050	1,001	905	810	650	530	529	378	285	220	175	128	34	17,441	0	913
1998-99	17,441	1,118	6,006	1,222	1,186	1,159	1,119	1,080	1,031	941	852	695	580	477	378	306	235	177	144	38	17,627	0	932
1999-00	17,627	1,118	5,907	1,197	1,199	1,175	1,139	1,104	1,060	969	885	731	621	522	341	306	253	190	146	38	17,780	0	964
2000-01	17,780	1,118	5,828	1,177	1,174	1,187	1,154	1,122	1,083	996	912	759	652	558	373	276	253	204	156	41	17,907	0	992
2001-02	17,907	1,118	5,765	1,162	1,155	1,163	1,166	1,138	1,102	1,018	937	782	678	587	399	302	228	204	168	44	17,996	0	1,028
2002-03	17,996	1,118	5,715	1,149	1,140	1,144	1,142	1,149	1,117	1,035	958	804	698	610	420	323	249	184	168	44	18,048	0	1,066

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Table H-1.

Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:

Ages 50-64: 1.00 -- i.e., faculty who exit the model = 0%

Ages 65 + : 1.00 -- i.e., faculty who exit the model = 0%

Table H-3

Projected Faculty Retirements [1]

Standard Survival Rate

Year	Beg Yr Faculty Over 50	Beg Yr Enter. Cohort	Number of Faculty at Year-End by Age Cohort																				End Yr Faculty Over 50	Oth. Trans	Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71			
1988-89	12,785	1,265	4,610	840	914	904	827	761	739	618	597	503	445	412	275	249	186	123	118	27	13,146	157	746
1989-90	13,146	1,265	4,892	910	815	896	879	807	740	687	575	507	444	396	291	221	204	149	99	26	13,537	157	716
1990-91	13,537	1,265	5,114	965	884	799	871	858	784	688	640	489	448	396	280	233	180	163	120	31	13,943	161	698
1991-92	13,943	1,265	5,289	1,009	937	866	777	850	834	729	641	544	432	399	280	224	191	144	131	34	14,313	165	730
1992-93	14,313	1,265	5,428	1,044	980	919	842	759	826	776	679	545	480	385	282	224	183	153	116	30	14,651	169	757
1993-94	14,651	1,293	5,565	1,071	1,014	961	894	822	737	769	722	577	481	428	272	226	183	147	123	32	15,024	172	748
1994-95	15,024	1,293	5,673	1,098	1,040	994	934	872	799	686	716	614	510	428	303	218	185	147	118	30	15,365	177	775
1995-96	15,365	1,293	5,758	1,120	1,066	1,020	966	912	848	743	639	608	542	454	303	242	178	148	118	30	15,697	180	781
1996-97	15,697	1,293	5,825	1,136	1,087	1,045	992	943	886	789	692	543	538	483	321	243	198	143	119	31	16,014	184	792
1997-98	16,014	1,293	5,879	1,150	1,103	1,066	1,017	968	917	824	735	588	480	479	342	257	199	159	115	29	16,305	188	815
1998-99	16,305	1,118	5,747	1,160	1,116	1,082	1,036	992	941	853	768	624	520	427	339	274	211	159	128	33	16,409	191	823
1999-00	16,409	1,118	5,644	1,134	1,127	1,094	1,052	1,012	964	875	794	652	551	463	302	271	224	168	128	33	16,489	190	847
2000-01	16,489	1,118	5,562	1,114	1,101	1,104	1,064	1,027	983	897	815	675	576	491	328	242	222	179	136	35	16,551	191	865
2001-02	16,551	1,118	5,497	1,098	1,082	1,080	1,074	1,039	998	915	836	692	596	513	348	262	198	177	144	37	16,586	192	891
2002-03	16,586	1,118	5,446	1,085	1,066	1,060	1,050	1,048	1,010	928	852	710	612	531	363	278	215	158	143	37	16,592	193	918

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Table H-1.

Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older.

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:

Ages 50-64: 0.99 -- i.e., faculty who exit the model = 1%

Ages 65 + : 0.98 -- i.e., faculty who exit the model = 2%

Table H-4

Projected Faculty Retirements [1]

Low Survival Rate

Year	Beg Yr Faculty Over 50	Beg Yr Enter. Cohort	Number of Faculty at Year-End by Age Cohort																		End Yr Faculty Over 50	Oth. Trans	Rets
			50-54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71			
1988-89	12,785	1,265	4,564	831	905	895	818	754	731	612	591	498	440	407	273	246	184	122	116	27	13,013	297	740
1989-90	13,013	1,265	4,806	892	799	878	861	791	725	673	564	497	436	388	285	216	199	146	97	25	13,278	299	702
1990-91	13,278	1,265	4,995	939	857	775	845	832	761	668	621	474	435	384	272	226	175	158	116	30	13,562	304	677
1991-92	13,562	1,265	5,143	976	902	832	746	816	801	700	616	522	415	383	269	215	183	138	126	32	13,816	309	701
1992-93	13,816	1,265	5,259	1,005	938	876	801	721	785	737	646	518	457	366	268	213	174	145	110	28	14,047	314	720
1993-94	14,047	1,293	5,376	1,027	966	910	843	774	694	723	680	543	453	402	256	213	173	138	116	29	14,316	318	705
1994-95	14,316	1,293	5,468	1,050	987	937	876	815	744	639	667	572	475	399	282	203	172	137	110	28	14,562	325	723
1995-96	14,562	1,293	5,540	1,068	1,010	958	902	847	784	685	589	561	500	419	280	224	164	136	109	28	14,803	330	722
1996-97	14,803	1,293	5,596	1,082	1,027	980	923	872	814	722	632	495	491	441	293	222	181	130	109	28	15,037	335	725
1997-98	15,037	1,293	5,640	1,093	1,040	997	943	891	839	750	665	531	433	432	309	233	179	143	104	26	15,250	340	740
1998-99	15,250	1,118	5,503	1,102	1,051	1,010	959	911	857	772	692	560	465	382	303	245	188	142	114	29	15,285	344	739
1999-00	15,285	1,118	5,396	1,075	1,059	1,020	972	927	877	790	712	582	489	410	268	240	198	149	113	29	15,305	341	757
2000-01	15,305	1,118	5,312	1,054	1,033	1,028	982	939	892	807	728	599	509	431	287	212	194	157	119	30	15,314	342	767
2001-02	15,314	1,118	5,247	1,038	1,013	1,003	990	949	903	821	744	612	524	448	302	228	172	154	125	32	15,304	342	786
2002-03	15,304	1,118	5,195	1,025	998	983	965	956	913	832	757	626	536	462	314	240	184	136	123	31	15,275	342	805

[1] Age distribution of faculty age 54 and younger is estimated from national data; see Table H-1.

Faculty are assumed to be fully retired after age 71; survey data indicate that 0.8% of retirements occur at age 72 or older

The following "transition factors" are used to account for the estimated proportion of faculty who leave the college or university employment sector by means other than retirement:

Ages 50-64: 0.98 -- i.e., faculty who exit the model = 2%

Ages 65 + : 0.97 -- i.e., faculty who exit the model = 3%

APPENDIX I

Faculty Post-Separation Activities

Faculty Post-Separation Activities

Important information gleaned from the survey of individual separators relates to the employment or retirement status of older faculty who leave an institution. The overwhelming proportion, 96 percent, of faculty age 55 and older who separate from an institution indicate that they have formally retired. Tables I-1 and I-2 summarize the post-retirement status of those individuals by institutional level and control, respectively.

Of the 505 persons who are formally retired, 65 percent (331 retirees) indicate that they are fully retired. Another 20 percent (101) had formally retired, but are still employed on a part-time basis by a college or university. Only 3 percent (14) of retirees are still employed by a college or university on a full-time basis. Finally, 12 percent (59) of retirees are now working for an employer other than a college or a university, or are self-employed.

Table I-1 shows that professors who retired from doctoral institutions are the most likely to be fully retired, while those from baccalaureate and comprehensive institutions are more likely to continue working either full- or part-time. A chi square analysis shows that this relationship is significant. This difference probably reflects the fact that retirees from doctoral institutions are typically older than their colleagues from other colleges and universities (Table 10).

Table I-1

Employment Status of Retired Separators by Level of Institution [1]

Status	Baccalaureate	Comprehensive	Doctoral	Total
Fully retired; no longer employed	36	45	250	331
Retired but still employed by a college or university on a part-time basis	12	20	69	101
Retired but still employed by a college or university on a full-time basis	5	2	7	14
Retired from a college or university, now working for an employer other than a college or university	8	13	38	59
TOTAL	61	80	364	505
		Chi-Square		
		d.f.	Value	Prob.
	Level by status	6	12.659	0.049

[1] This table includes only individuals who have formally retired from a college or university and are no longer making contributions to its retirement program.

Table I-2

Employment Status of Retired Separators by Control of Institution [1]

Status	Public	Independent	Total
Fully retired; no longer employed	212	119	331
Retired but still employed by a college or university on a part-time basis	70	31	101
Retired but still employed by a college or university on a full-time basis	11	3	14
Retired from a college or university now working for an employer other than a college or university	34	25	59
TOTAL	327	178	505
	Chi-Square		
	d.f.	Value	Prob.
Control by status	3	3.474	0.324

[1] This table includes only individuals who have formally retired from a college or university and are no longer making contributions to its retirement program.

Table I-3 provides data on the small share of individuals who separate but do not retire. Only 4 percent of the respondents fit this description. Two-thirds of these indicate that they are still employed by a college or university.

Table I-3

Employment Status of Separators Who Are Not Retired [1]

Control & Level	Employed by a college or university	Employed elsewhere	Total
Public:			
Baccalaureate			
Comprehensive		2	2
Doctoral	4	2	6
Total Public	4	4	8
Independent:			
Baccalaureate	1	2	3
Comprehensive	3		3
Doctoral	4		4
Total Independent	8	2	10
TOTAL	12	6	18

[1] This table provides data on faculty aged 55 or older who separated from a college or university in 1987-88, but who did not formally retire from that institution.

Table I-4 shows the average age of each of the groups identified above. Not surprisingly, separators who report that they are not retired are among the youngest respondents, with average ages of 60.1 and 57.0 years. The youngest group of retirees, with an average age of 60.8, are those who moved to full-time employment at another institution.

Table I-4

Average Age of Age 55-and-Older Separators by Retirement-Employment Status

Status	Average Age	Number	Percent	Standard Deviation
Fully retired; no longer employed	64.9	323	64.6	4.0
Retired but still employed by a college or university on a part-time basis	65.4	94	18.8	4.2
Retired but still employed by a college or university on a full-time basis	60.8	13	2.6	4.7
Retired from a college or university, now working for an employer other than a college or university	62.6	55	11.0	4.8
Not retired, employed by a college or university	60.6	11	2.2	5.6
Not retired, now working for an employer other than a college or university, or self-employed	57.0	4	0.8	0.8
TOTAL	64.5	500	100.0%	4.5

This publication is one in a series produced by the Western Interstate Commission for Higher Education (WICHE), focusing on the factors affecting faculty supply and demand.

Titles in this series are:

Bringing Into Focus the Factors Affecting Faculty Supply and Demand: A Primer for Higher Education and State Policymakers (2A210), 1991. This study presents a comprehensive review of the literature on factors affecting faculty supply and demand. Its objective is to provide information to state and higher education policymakers and planners to help guide the development of policies and practices affecting faculty supply and demand.

The Literature on Factors Affecting Faculty Supply and Demand: An Annotated Bibliography (2A211), 1991. This is an annotated bibliography of the recent literature on factors affecting faculty supply and demand.

Faculty Retirement Projections Beyond 1994: Effects of Policy on Individual Choice (2A212), 1991. This study examines the age distribution of faculty retirements at 101 institutions employing 35,000 faculty. It examines both historical retirement patterns and the distributions of faculty by age and discipline. Also examined are data from a survey of 500 retired faculty on factors influencing their retirement decision.

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